

THE UNIVERSITY OF HONG KONG
LIBRARIES



Hong Kong Collection

HKUCS News

The Newsletter of Department of Computer Science, The University of Hong Kong, Pokfulam Road, HK

Vol. 1, No. 1

January 1993

A MESSAGE

*By Prof. F. Chin, Head,
Department of Computer Science*

Welcome to the inaugural issue of *HKUCS News*, the newsletter of Computer Science Department at HKU. We hope to publish this newsletter regularly on a quarterly basis.

In the last few years, our department has witnessed continual growth in terms of its program offerings both at undergraduate and postgraduate levels. We currently offer programs in the areas of computer science, computer engineering, and information systems.

In light of this rapid expansion, we feel there is a need for a forum to communicate with our different constituencies: our students, alumni, faculty and

staff. To this end, we hope to use this newsletter as a vehicle not only to inform you about the multitude of academic and extra curricular activities in our department, but also to exchange ideas and receive feedback from you. This issue is a byproduct of the efforts of many of our students, faculty, and technical and support staff.

We are counting on you to help us improve the quality of the newsletter by sending your comments and suggestions to *HKUCS News*, Department of Computer Science, HKU, Pokfulam Road, or via csnews@csd.hku.hk.

We wish you a happy and productive year. ☺

SRG

*By Dr. F.C.M. Lau, Lecturer
Department of Computer Science*

The Systems Research Group (SRG) is one of the major research groups in the Department, comprising two lecturers and 10-15 postgraduate students. The group was formed in 1988, and had its first M.Phil. graduated in 1990. It offers a wide variety of research topics/opportunities to postgraduates in the group. The two main ongoing projects, funded by various research grants are: A parallel programming environment for the transputer and the Knowles Project. The latter is a project on developing a LAN-based software infrastructure for multimedia

applications. Details of these projects can be found in our Department Research Handbook. The work involved in these projects is immense, and so the group is constantly in need of people. If interested (in pursuing a postgraduate degree or working as a research assistant), you may contact Dr. Francis Lau or Dr. Henry Cheung. The group has recently moved to K825, vacating K847 for the expansion of undergraduate lab space. A list of research papers produced by the group in 1992 and a couple of upcoming ones can be found in the Research Section of the newsletter. ☺

HKUCS News is published quarterly by Department of Computer Science, The University of Hong Kong. We dedicate this inaugural issue to all our support and technical staff. A big thank you to Irene Au (support), William Chan (Manager, Technical Staff Office), Priscilla Chung (support), K.M. Fok (technical), Maria Lam (support), Smitty Lam (support), Thomas Lau (technical), I.K. Mak (technical), Shirley Wong (Executive Officer), and Y.K. Yuen (technical).

RESEARCH

Chan C. and Wong P.K. "A Branch and Bound Decision Tree Bayes Classifier for Robust Multi-font Printed Chinese Character Recognition," *Proc. of TENCON'92*, Melbourne, Australia, Nov. 92.

Chan K.P. and Cheung Y. S. "Fuzzy-Attribute Graph with Application to Chinese Character Recognition," *IEEE Transactions on System, Man and Cybernetics*, Vol 22, No. 1, pp. 153-160, Jan/Feb 1992.

Chan K.P. and Cheung Y. S. "Clustering of Clusters," *Pattern Recognition*, Vol. 25, No. 2, pp. 211-217, Feb., 1992.

Chan C. and Wu J.X. "Static Representation of Speech Dynamics for Isolated Word Recognition," *Proc. of IEEE Int'l Conference on ASSP*, pp. I529-I532, San Francisco, March, 1992.

Chan C. and Chan T.C. "A Controlled Study of the Suitability and Limitations of Static Modelling of Speech," *Proc. of TENCON'92*, Melbourne, Australia, Nov. 92.

Chan C. and Wong P.K. "A Branch and Bound Decision Tree Bayes Classifier for Robust Multi-font Printed Chinese Character Recognition," to appear in the *Journal of Information Science and Engineering*.

Chan N.C. and Chan C. "Prosodic Rules for Connected Mandarin Synthesis," *Journal of Information Science and Engineering*, 8, pp. 261-281, 1992.

Chan C. and Lee K.K. "Construction of a Mandarin Corpus," *Proc. of Int'l Computer Symposium*, Taichung, Dec. 1992.

Chan N., Chin F., and Choi A. "Extraction of Stroke Information from Printed Chinese Characters Using Occluded Object Recognition Techniques," *Proc. of 1992 Int'l Conference on CPCOL*.

Chan W.S. & Chin F. "Approximation of Polygonal Curves with Minimum Number of Line Segments," *SAAC '92 Third International Symposium on Algorithm & Computation*, Japan, Dec. 1992

Chin F., Choi A. and Luo Y. "Optimal Generating Kernels for Image Pyramids by Piecewise Fitting," *IEEE Transactions on PAMI*, Nov. 1992.

Cheung W.H. "Improvement on Fidge Logical Clocks," *Proceedings of 1992 IEEE Region 10 International Conference on Computers, Communications and Automation towards the 21st Century*. Melbourne, Australia. November 1992.

Cheung S. and Lau F.C.M. "Mesh Permutation Routing with Locality," *Information Processing Letters*. Vol. 43, August 1992.

Chong K.F. and Lam T.W. "Finding Connected Components in $O(\log n \log \log n)$ time on the EREW PRAM," *The Fourth ACM-SIAM Symposium on Discrete Algorithms*, Austin, Texas, Jan 1993.

Evans J.B. "The Devnet: a Petri Net for Discrete Event Simulation," in (Rozenberg, G., Ed.) *Advances in Petri Nets, Lecture Notes in Computer Science*, Springer-Verlag, Berlin, submitted March 1992, preprinted as Department of Computer Science Technical Report TR-92-04, March 1992, pp. 28; revised as Technical Report TR-92-10, November 1992, pp.35.

Evans J.B. "Temporal Programming with SIMIAN", *Association of Simula Users Newsletter*, October 1992, pp. 51-59.

Farhoomand A.F. "A Snapshot of Electronic Data Interchange in the 1990s," *EDIFORUM, The Journal of Electronic Data Interchange*, No. 1, 1992.

Han Y. "Fault-Tolerant Broadcasting in Binary Jumping Networks," *ISAAC '92 Third International Symposium on Algorithm & Computation*, Japan, Dec. 1992

Huo Q. and Chan C. "Gradient Projection Methods for HMM Training," *Proc. of Fourth Australian Int'l Conference*, Brisbane, Australia, Dec. 92.

Lam T.W. and Ruzzo W.L. "Results in Communication Complexity Classes," *Journal of Computer and System Sciences*, vol 44, No 2, April 1992.

Lam K.H. and Choi A. "Geometric Object Reconstruction from Ray-Sum Data," *Proc. of ICARCV '92*.

Lam T.W. and Lee K.H. "The Implicit Dictionary Problem Revisited," *The Third Int'l Symposium on Algorithms and Computation*, Japan, Dec. 1992.

Continued on page 4...

RESEARCH

Lau S.W. and Lau F.C.M. "Principle of Structured Buffer Pool Approach to Deadlock Prevention in Packet-Switched Networks." Proceedings of *1st International Conference on Computer Communications and Networks*. San Diego, California. June 1992.

Lau S.W. and Lau F.C.M. "A Hybrid Approach to Deadlock Prevention in Packet-Switched Networks," Proceedings of *1st International Conference on Computer Communications and Networks*. San Diego, California. June 1992.

Lau S.W. and Lau F.C.M. "Real-time Message Routing with Virtual Cut-through in Transputer Networks," Proceedings of *4th Transputer/Occam International Conference*. Tokyo, Japan. June 1992.

Lee M.S. and Choi A. "Linear time motion planning for two square, movable obstacles in a grid environment," *Proc. of IEEE Workshop on Emerging Technology and Factory Automation*, 1992.

Loong A.H.S. and Cheung W.H. "An Implementation Model for Developing Network Protocol Infrastructure," *1993 IEEE Region 10 International Conference on Computers, Communication and Automation*. Beijing, China. October 1993.

Shea, K.M., Cheung M.H. and Lau F.C.M. "A Technique for Fast Preemptions in a Multi-Priority Environment," *16th Technical Meeting of the World occam and Transputer User Group (WoTUG)*. Sheffield, U.K. March 1993.

Shea, K.M., Cheung M.H. and Lau F.C.M. "An Efficient Multi-Priority Scheduler for the Transputer." Proceedings of *15th Technical Meeting of World occam and Transputer User group (WoTUG)*. Aberdeen, U.K. April 1992.

Tse T.H. and Goguen J.A. "Functional Object-Oriented Design," in *Foundations of Information Systems Specification and Design*, Dagstuhl Seminar Report 35, H.-D. Ehrich, A. Sernadas, and J.A. Goguen (eds.), International Conference and Research Center for Computer Science, Wadern, Germany (1992).

Wong P.K. and Chan C. "A Robust Real-time Recognizer of Printed Chinese Characters," *Proc. of Int'l Computer Science Conference'92*, Hong Kong, 1992.

Wong P.K. and Chan C. "A Robust Real-time Recognizer of Printed Chinese Characters," to appear in *Journal of Pattern Recognition*.

Wu J.X. and Chan C. "Isolated Word Recognition by Neural Network Models with Cross-Correlation Coefficients for Speech Dynamics," to appear in *IEEE Transactions on PAMI*.

Wu J.X, Chan C. and Shi P.F. "A Gamma Network Approach to Automatic Speech Recognition," *Proc. of Fourth Australian Int'l Conference*, Brisbane, Australia, Dec. 92.

Xu C.Z. and Lau F.C.M. "Analysis of The Generalized Dimension Exchange Method for Dynamic Load Balancing," *Journal of Parallel and Distributed Computing*. December 1992.

Xu, C.Z. and Lau F.C.M. "Distributed Termination Detection of Loosely Synchronized Computations," Proceedings of *4th IEEE Symposium on Parallel and Distributed Processing*. Arlington, Texas. December 1992.

NEWS

- Dr. A. Choi was recently elected Chairman of the *Association of Computing Machinery*, Hong Kong Chapter. *The Chapter will organize the Third Annual ACM Hong Kong Chapter Scholastic Programming Contest*, in July 1993. Last year's winners were HKUST (consisting of first-year students!) and the first and second runners-up were CUHK and CPHK, respectively. Our team came in fourth. A surprising departure from our performance in previous years. As some of you

may recall, our team won the contest in 1991. So let's put our programming gears in place and get ready for the next year's contest, which will also include a battle of Chinese checkers programs. In previous years, prizes have included CD-ROMs, CD-ROM drives, E-Ten boards, and summer internships at Microsoft (Hong Kong). For rules and communication protocols please contact Dr. Choi via choi@csd.hku.hk.

Continued on page 5...

COMPUTER CORNER

By William Chan,
Manager, Technical Staff Office

The Technical Staff Office is the technical arm of the Department responsible for the smooth operation of computers and telecommunications networks used by students, faculty, and technical and support staff. Currently, there are 140 computers, about half of which are UNIX-based workstations and servers, while the other half are mainly PCs and Macintoshes. Another 20 UNIX-based workstations as well as 10 more PC/486's will be added to the network this year.

Our HK\$10 million computer utility includes one 670MP Sun SPARCserver, one 3/280S Sun server, 36 SPARC IPC workstations, one SGI Crimson server, four SGI Indigo workstations, eight IBM

RS/6000 workstations, one HP9000/700 workstation, 17 HP9000/300 workstations, and 70 PCs and Macintoshes.

All systems in the Department are connected to a TCP/IP-based Ethernet network, which consists of eight Ethernet segments. Three of these segments run through the Computing Laboratories used by students, while the other five run through the offices of the administrative, teaching, and technical staff. In order to improve the performance of the network, plans are under way to implement a Fibre Distributed Data Interface (FDDI) backbone ring, which will offer 100 megabit per second throughput. If everything goes smooth, the FDDI ring should be in operation next year. For further information regarding any aspects of our computer networks, please contact wkpchan@csd.hku.hk.

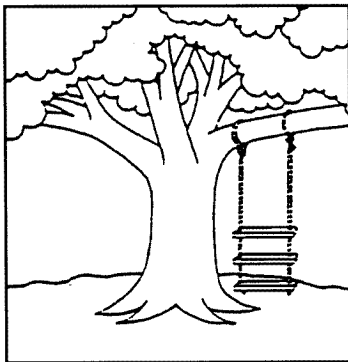
NEWS

- Dr. Choi presented a paper coauthored with Prof. Chin and a HKU student, N.K. Chan, who is now a graduate student in Japan, at the 1992 *Int'l Conference on Computer Processing of Chinese and Oriental Languages*, which was held in Florida, USA, Dec 15-19, 1992.
- Dr. K.P. Chow has been undertaking a number of consultancy projects in different organizations including China Light and Power and Urban Council. He is also completing a pilot/crew scheduling project for Cathay Pacific Airline. In addition, he and Prof. Chin have started a new project at Cathay to design and implement a system for information retrieval and remote ticket purchasing.
- Dr. J.B. Evans and Dr W.H. Cheung are members of a joint Six-form Working Party (ED Department and Hong Kong Examination Authority) to draft the Syllabus for the A-level and I-level Computer Science subject.
- Dr. A. Farhoomand recently attended the 13th *Int'l Conference on Information Systems* in Dallas, Texas, USA.
- Dr. Francis Lau is Chairman for Region 10, IEEE Computer Society's Special Task Force on Student Effective Support Plan; member of Asia-Pacific Activities Committee, IEEE Computer Society; Chairman, Professional Development and Examinations Committee, Hong Kong Computer Society; member of Program Committee, 1993 Pacific Rim International Symposium on Fault-Tolerant Systems ('93 PRFTS); and External member, course validation panel for postgraduate diploma in computing, City Polytechnic. Dr. Lau was also Editor-in-Chief of *Hong Kong Computer Journal* until Dec. 1992, as well as member of Program Committee, 4th IEEE Symposium on Parallel and Distributed Processing, which was held in Arlington, Texas, in Dec. 1992.
- Dr. T.H. Tse was awarded a grant in the amount of HK\$500,000 for a project entitled "A 3-dimensional Net-based Object-Oriented Development Environment".
- Dr. T.H. Tse was awarded a Visiting Fellowship at the University of Oxford from June to September 1992 by the Association of Commonwealth Universities. The nomination was one of almost one hundred considered by the Association's special committee of selection. The fellowship enabled Dr. Tse to work with Professor Joseph Goguen on a joint project entitled *Functional Object-Oriented Design (FOOD)*. Some of the results of the project were presented in the Dagstuhl Seminar on Foundations of Information Systems Specification and Design held at the *International Conference and Research Center for Computer Science*, Warden, Germany. If you are interested in a copy of the paper, please contact Dr. Tse at tse@csd.hku.hk.

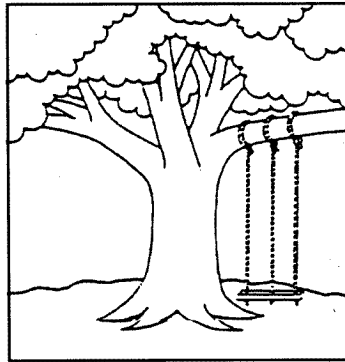
Congratulations are in order to the following students for their academic achievements.

- Mr Lee Ka Hing, a Ph.D. student, has been awarded a Hong Kong and China Gas Company Limited Postgraduate Scholarship in the amount of HK\$10,000.
- Mr C.Z. Xu, a Ph.D. student, has been awarded a Li Ka Shing Scholarship and also a Hong Kong and China Gas Company Limited Postgraduate Scholarship in the amount of HK\$15,000.
- Mr Chen Li, an M.Phil. student, has been awarded a Li Ka Shing Scholarship.
- Mr Lee Tsak Ting (John), a CS3 student, has been awarded a Chinese Manufacturing Association and Donors Scholarship.
- Mr. Chan Kwong Fai, an M.Phil. student, in collaboration with Dr. T.W. Lam, presented a paper at the *Second Int'l Conference on Algorithms*. This paper was cited on a recent issue of SIGACT NEWS as one of the best papers presented in the conference.

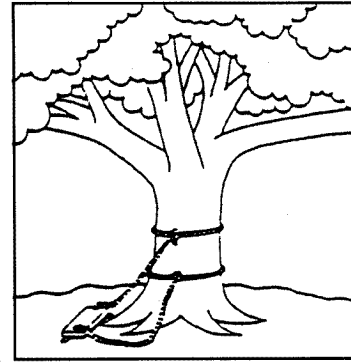
Lack of communication in project development



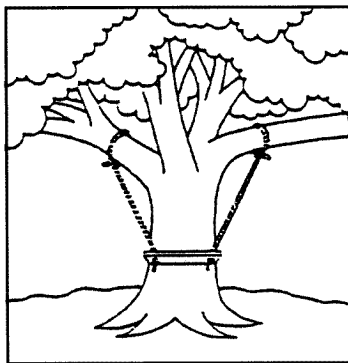
As envisioned by the development team



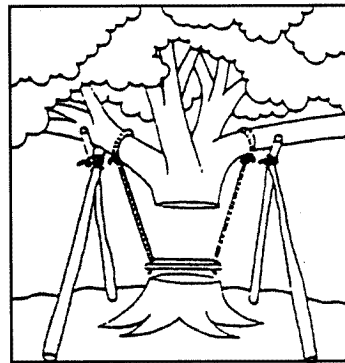
As specified in the product request



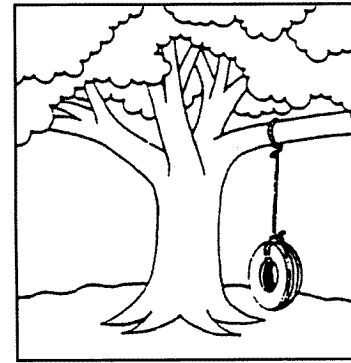
As designed by the senior designer



As perceived by the implementor



As installed



What the customer wanted

Dear alumna/alumnus:

We would like to hear from you. Please send us a short note telling us about your job or any other newsworthy item. We would also appreciate it if you could help us update our mailing list by sending your address to Ms. Maria Lam, Department of Computer Science, HKU, Pokfulam Road.

HKUICS NEWS

Vol. 1, No. 2

May 1993

EDITORIAL

Dr. A.F. Farhoomand,
Lecturer in Information Systems

One of my colleagues in Canada recently told me that she found her students to be more attentive to her lectures than ever before. Since she had not changed her teaching style or the content of her courses, she attributed the change in the students' attitudes to economic recession!

In light of the current difficulties faced by most North American graduates in finding jobs of their choice, this simple explanation seems plausible at first. A closer examination of the economy, however, reveals that recessionary forces usually have short-term effects on markets. The long-term tightening of the job market

seems to have mainly been caused by the changing nature of today's global economy. Something which has prompted a growing number of companies to downsize their workforce and operations through work re-engineering. These firms have started to ask tough questions regarding the way they have traditionally conducted their businesses. In the process, information systems have been used not to automate the existing operations, but rather, to redesign business processes. Through decentralized processing of information at its source of creation, people who produce information are encouraged to also process it.

(Continued on page 5)

GRADUATE STUDIES

This year, the Department received 138 applications for M.Sc. program and 65 applications for M.Phil. and Ph.D. programs. Out of these, the admission committee admitted 15 students to the M.Sc. program and 25 students to the M.Phil. and Ph.D. programs. We welcome these students

aboard and wish them best of luck in their new and challenging endeavour.

For further information about the graduate programs, please contact the Departmental office at 8597964.

NEWS

- Prof. F. Chin was elected, by acclamation, as Head of the Department for a period of three years starting June 1, 1993. He has also been invited to serve on the Editorial Boards of *Computer Processing of Chinese and Oriental Languages: An International Journal of the Chinese Language Computer Society*; *Hong Kong Institution of Engineers Transactions*, and as an Honorary advisor to *Hong Kong Computer Journal*. Prof. Chin was recently commissioned by the Hong Kong Productivity Council to undertake a magnetic character recognition project.

- Dr. C. Chan recently attended the first meeting of *Chinese Information Processing Consortium*, which was held in Minneapolis, US. The purpose of this consortium was to promote collaboration between researchers in the area of Chinese information processing. The consortium was attended by representatives from Taiwan, USA, China and Hong Kong. A workshop will be organized in the near future to promote exchange of free software packages and databases.

(Continued on page 3)

HKUCS News is a newsletter published three times a year by the Department of Computer Science, The University of Hong Kong, Pokfulam Road, Hong Kong. Please submit your correspondence to the above address or via csnews@csd.hku.hk.

PROFILE



Professor Francis Chin, Head of the Department, was born and raised in Hong Kong. He came from a poor family and spent most of his childhood at Shek Kip Mei Estate. He left the territory in 1968 to study at the University of Toronto where he obtained a B.A.Sc. degree in 1972. He subsequently went to

Princeton University where he was awarded M.Sc., M.A., and Ph.D. degrees within 3 years.

Prof. Chin returned to Hong Kong in 1983 after having taught in the U.S. and Canada for 8 years. He started his career in Hong Kong at the Chinese University of Hong Kong as a Senior Lecturer and subsequently as a Reader at the University of Hong Kong. He then became Director

of Centre of Computer Studies and Applications, and finally Head and Professor of Computer Science in 1988.

Prof. Chin has served on program committees of numerous conferences and on editorial boards of academic journals. His publications include over 40 journal articles and 30 conference proceedings. His current research interests relate to the practical applications of algorithms. In recognition of this contribution to computer education in Hong Kong, he was selected for a Ten Outstanding Young Persons' Award in 1987, and conferred the Honorary Fellow of the Hong Kong Association for Computer Education in 1991. Prof. Chin also received the HKU Students Union's Best Teaching Award in 1992.

His hobbies include chess, go-game, bridge and jogging (mainly as an aspiration!). Prof. Chin's career goals are to advance computer education in Hong Kong and to create a congenial and creative academic environment conducive to scholastic excellence.

GRANTS

The General Purposes Committee of the University of Hong Kong recently approved the funding, in the amount of \$595,000, for a font server in Chinese computing environment with high-speed font storage disks and high-resolution laser printer for Chinese text printing. This grant was awarded to Dr. H.W. Chan and Dr. H.W.H. Cheung.

The Committee also approved the funding, in the amount of \$400,000, for a network of high-performance multimedia computer systems: EISA-bus 486/586 PCs with transputer modules, multimedia hardware (video, audio, imaging, and graphics hardware) and communications hardware (Ethernet or FDDI interface and cables, fax cards, performance monitor). This grant was awarded to Dr. H.W.H. Cheung and Dr. F.C.M. Lau.

The Committee of Management of the Hung Hing Ying Physical Sciences Research Fund awarded a research grant to Dr. F.C.M. Lau, in the amount \$50,000, for a project entitled "Parallel Processing for Efficient Photorealistic Building Walkthroughs."

The Leung Kau Kui Research & Teaching Endowment Fund awarded a grant to Dr. C. Chan, in the amount of

\$40,000, to increase the disk space for undergraduate pattern recognition projects.

Dr. T.H. Tse was awarded a conference grant to attend *The International Conference on Software Engineering*, to be held in College Park, Maryland, USA, on May 19 - 21, 1993.

Mr. M.H. Cheung, an M.Phil. student, received a grant to attend *The 16th Technical Meeting of the World Occam and Transputer User Group*, which was held in Sheffield, UK, on March 28 - 31, 1993.

Mr. Shea Kai Ming, a Ph.D. Student, received a research grant for Higher Degree Students for a project entitled "Object oriented computer systems." He was also awarded a conference grant from the HKU Engineering Alumni Association to attend *The 5th Transputer International Conference*, to be held in Tokyo, Japan, in June 10 - 11, 1993.

Mr. K.W. Wong, an M.Phil. student, was awarded a grant to attend *The 20th Annual International Conference on Computer Graphics and Interactive Techniques*, to be held in Anaheim, CA, USA, on August 1 - 6, 1993.

- The organizing committee of the Third Annual ACM Hong Kong Chapter Scholastic Programming Contest has made arrangements for the winning team to represent Hong Kong in the ACM Far East Regional Contest. Under the sponsorship of Cathay Pacific Airways, the winning team and their coach will travel to Tsing Tsu, Taiwan in November 1993. For more information, please contact Dr. A. Choi via choi@csd.hku.hk.
- Dr. A.F. Farhoomand was recently appointed Book Reviews Editor of *Data Base*, a quarterly publication of the ACM's Special Interest Group on Business Information Technology; a reviewer for the Decision Sciences Institute; and an external examiner for Asia International Open University. The daily Chinese newspaper, *Sing Tao*, recently featured him in an interview related to the future trends in office automation. Dr. Farhoomand was also commissioned by the EDI World Institute, headquartered in Montreal, Canada, to prepare a research proposal for the United Nations Conference on Trade and Development, and to conduct a survey of nine countries in the Pacific Basin to identify factors influencing trade efficiency and customs clearance in the region.
- Dr. Y. Han and Dr. T.W. Lam, in collaboration with three other colleagues from Chinese University of Hong Kong and Hong Kong University of Science and Technology, organized a *Theory Day*, which was held on Jan. 9, 1993.
- Dr. F.C.M. Lau was replaced by Dr. Horace Ip of City Polytechnic as Chief Editor of *Hong Kong Computer Journal*, the official journal of the Hong Kong Computer Society. Dr. Lau remains as a member of the Journal's editorial board, and will continue to serve as Editor of the *Hong Kong Computer Society Newsletter*. He was also re-appointed as the Chairman of IEEE Computer Society's Distinguished Visitors Program for Asia Pacific for 1992, and a Member of the Society's Asia Pacific Activities Committee for 1992. Dr. Lau was also appointed as Co-chairman of the Society's Students Activities Committee for Region 10. Furthermore, he was recently invited by City Polytechnic to be a member of the course validation panel for a proposed postgraduate diploma course in computing.
- Dr. T.H. Tse has been re-appointed by His Excellency, the Governor, as an Adjudicator of the Immigration Tribunal for the period, March 1, 1993 to February 28, 1995. He has also been appointed as a member of the Committee on Information Technology Training of the Vocational Training Council for the period, April 1, 1993 to March 31, 1996. In addition, Dr. Tse has been elected an European Engineer by the Federation Europeenne d'Associations Nationales d'Ingenieurs, Paris, and a Fellow of the Institute of Data Processing Management. He was also awarded a special prize at the Hong Kong Computer Society logo design competition in January 1993.
- Dr. Barry Joe of University of Alberta, Canada, recently visited the Department for a period of two months. During his visit, he was involved in projects related to computer graphics and computational geometry.
- Mrs. Debjani Nag of Department of National Informatics, Government of India, is visiting the Department for a period of three months. Her fellowship, sponsored by the United Nations Development Programme (UNDP), relates to a study of factors influencing the success of Electronic Data Interchange in developing countries.
- Dr. Peter Tsin of University of Windsor, Canada, is currently visiting the Department to continue his work in the area of computational geometry.
- Two of our students, Mr. Chan Wun Tat and Mr. Ng Man Keung, undertook a printed circuit board routing problem, which was initiated by Elec & Eltek Company. The performance of the pilot software project was excellent, routing 98% within minutes. This project was supervised by Prof. Chin.

COMPUTER PROGRAMMING CHALLENGE

Dr. A. Choi has contributed the following programming puzzle. The accompanying solution appears on page 4.

Write a program that prints an exact copy of itself when executed. A simple solution is of course to have the program read its source file and print that out. Since that is not very interesting, your solution should not read any input.

THE SPEECH LABORATORY

*Dr. C. Chan,
Senior Lecturer in Computer Science*

The name of this laboratory is only suggestive and by no means an accurate and inclusive definition of the kind of activities going on there. It nevertheless reflects the major research projects. Our major interest rests on the recognition of speech, although in the past, we have investigated into the synthesis of fluent Putonghua also.

Serious research in speech recognition started some 30 years ago. The first major investigation was sponsored by DARPA and encouraging results were reported in 1976. Since the early 1980's, hidden Markov modeling of the speech production process became the foundation of this area of research, yielding significant engineering progress. The HARC continuous speech recognition system of BBN is the state-of-the-art today. It runs in real-time on workstations for a vocabulary of over 1000 words. Although such a vocabulary is not sufficient for general purpose applications, the HARC system is indeed a very encouraging milestone.

Our speech research group has a solid understanding of the speech modeling theory. We are working on certain significant topics such as recognizer adaptation to suit new speakers and environments, and system parameters fine tuning for improved recognition rate. We are also developing a new theory of speech modeling that relaxes the Markov chain assumption of the speech production process. However, we have yet to acquire the experience

of building systems with large vocabulary. The main stumbling blocks have been the lack of computer power (until two years ago when we installed an HP730) and the absence of a large speech database for system training. The prospect has improved considerably now. Currently, we are building a Putonghua database (isolated syllables and connected utterances) of over 200 speakers. Each utterance will be phonetically labelled by an automatic process which builds the recognizer at the same time.

We have confidence that the first speaker independent connected Putonghua recognizer comes from our Speech Laboratory. Such a recognizer will remain a prototype unless it can cope with specific tasks such as Putonghua dictation with real-time response. This will entail more than signal processing and statistical pattern recognition, it will require some degree of syntactic and even semantic analysis of the hypothesized word sequence for the unknown utterance.

Speech research is not all we do in our group. In the past, we have built a recognizer of 4000 printed Chinese characters in the Song and Bold fonts. In the near future, we will tackle the formidable problem of recognizing the same number of hand-written Chinese characters from 100 writers. Our long-term aim is to overcome Chinese I/O problems. Those of you who share our vision are welcome to share you thoughts with us.

SOLUTION TO THE PROGRAMMING PROBLEM

```
#include <stdio.h>
main()
{ char *s[11], *dq, *nl, *bs; int i;
  dq = "\\\"; nl = "\\n\"; bs = "\\\";
  s[0] = "#include <stdio.h>";
  s[1] = "main()";
  s[2] = "{ char *s[11], *dq, *nl, *bs; int i;";
  s[3] = "%s%s";
  s[4] = "  dq = %s%s%s%s; nl = %s%s\n%s; bs = %s%s%s%s;%s";
  s[5] = "  s[%d] = %s%s%s;%s";
  s[6] = "  for (i=0; i<3; i++) printf(s[3], s[i], nl);";
  s[7] = "  printf(s[4], dq, bs, dq, dq, dq, bs, dq, dq, bs, bs, dq, nl);";
  s[8] = "  for (i=0; i<11; i++) printf(s[5], i, dq, s[i], dq, nl);";
  s[9] = "  for (i=6; i<11; i++) printf(s[3], s[i], nl);";
  s[10] = "}";
  for (i=0; i<3; i++) printf(s[3], s[i], nl);
  printf(s[4], dq, bs, dq, dq, dq, bs, dq, dq, bs, bs, dq, nl);
  for (i=0; i<11; i++) printf(s[5], i, dq, s[i], dq, nl);
  for (i=6; i<11; i++) printf(s[3], s[i], nl);
}
```

COMPUTER CORNER

Mr. W.K.P. Chan,
Computer Officer

A powerful server and about 30 more workstations will be put into service this summer. The server, named *dragon*, is a multiprocessor machine equipped with four SuperSPARC processors and four GB fixed disk storage. The workstations include two SPARCstation 10, four SPARCstation LX and 25 SPARCclassic. Also, 20 PC/486 will be added to the computing laboratories in order to further strengthen our PC computing environment. With these additions, the number of computers in the Department will reach 200 (100 UNIX workstations and servers, 100 PC compatibles and Macintoshes).

Early this year, improvements were made to our existing network configurations in order to alleviate the usual network problems during peak seasons of March and April. To cope with the network bandwidth problem, we have planned to implement an FDDI ring backbone which links the major servers and all Ethernet segments, connecting 200 stations via 100 megabits per second bandwidth. Another FDDI ring will be set up in the

System Research Group laboratory to facilitate multimedia research.

For the time being, two servers, *dragon* and *sunmp*, each having a single-attached interface, will be on the FDDI backbone. An FDDI concentrator links up these two servers and a high-throughput router with a star configuration. The router, equipped with a dual-attached FDDI interface and six Ethernet interfaces, is based on an 800 megabit per second backplane, offering each Ethernet interface full 10 megabits per second bandwidth.

Furthermore, all the workstations and servers on the network will be monitored by a large screen workstation running Sun Network Manager. The workstations and servers can then be monitored interactively, thus facilitating easier system administration and early detection of problems. For more information regarding any aspects of the computer facilities in the Department, please contact me via wkpchan@csd.hku.hk.

EDITORIAL

(Continued from page 1)

Firms have consequently been seeking graduates who are not only *information* literate, but are also capable of thinking critically. To be *information* literate, not only one needs to be proficient in computer use, but more importantly, one should have a solid understanding of the strategic importance of information. This includes, among other things, the ability to see the potential of information technology in terms of developing better products and services, expanding markets through internationalization, improving the firm's relationship with its customers and suppliers, creating barriers to entry, etc.

In addition to *information* literacy, innovative firms have increasingly been putting more emphasis on graduates' analytical skills. As you may know, Microsoft, the world's largest software company, has been one of the most sought-after companies by university graduates. As a matter of fact, over 120,000 applications were received by Microsoft in 1991, out of which only 2000 were hired. During one of the numerous interviews the question was

asked: "Why are manholes built circular?" According to the company, Microsoft was not interested in the correct answer (i.e., manholes are built circular so that their covers won't fall into them!). Rather, it was interested to see how the applicant used his/her analytical skills to design an answer.

All in all, it has become evident that the mere memorization of various subject matters offered in universities is not sufficient for competing in today's interdependent global market. To succeed in such a market, the enterprising student needs to develop an inquisitive and critical line of thinking; something that is possible only if education is treated as a perpetual *process*, rather than an end to itself.

For those of you who are about to enter the job market, we hope that the University has equipped you with the skills required for independent learning.

We bid you farewell and wish you *bonne chance*.

DID YOU KNOW ...

- ... That our 1988 undergraduates earned between \$150,000 to \$350,000 in 1992?
- ... That the average annual income of this group in 1992 was \$238,000?
- ... That one of our 1988 CS graduates, Mr. Arthur C.H. Chang, is the Marketing Manager of AppleCentre Jardine Office Systems in charge of 30 staff? If you are interested in a computer sales career, please call Mr. Chang at 880-3118.

CONGRATULATIONS!

- Mr. Lee Tsak Ting (John), a CS3 student, the recipient of the Motorola Semiconductors Scholarship, the Etta Trading Co. Ltd. Scholarship, and the AST Scholarship.
- Mr. Chan Kin Wah, a CS2 student, the recipient of Etta Trading Co. Ltd. Scholarship, the Hong Kong Computer Society Scholarship, and the Hong Kong Information Technology Management Club Scholarship.
- Mr. Shea Kai Ming, a Ph.D. Student, the recipient of the Hung Hing Ying Scholarship, and a Swire Scholarship.
- Mr. Chan Wing Shiu, an M.Phil. student, the recipient of a Swire Scholarship.
- Mr. Lee Ka Hing, a Ph.D. student, the recipient of a Swire Scholarship.

JOB OPPORTUNITY

Dr. C. Chan and Dr. K.P. Chan are looking for volunteers who are prepared to spend approximately 20 hours for the promotion of Chinese computing. They are currently involved in a research project related to recognition of hand written Chinese characters, which requires a large amount of data for analysis and system training. Specifically, there is a need for 100 individuals who can neatly copy from a printed set of some 6700 most

commonly used Chinese characters, as well as Latin letters, numerals, and special symbols. Your efforts will be rewarded with a student hourly rate. You can expect to copy 100 characters every 15 minutes or less, hence, the whole exercise should take no more than 15-20 hours.

If you are interested or need more information, please call Dr. C. Chan at 859-7075 or via cchan@csd.hku.hk.

RESEARCH

Cheung, S. and F.C.M. Lau, "A Lower Bound for Permutation Routing on Two-Dimensional Based Meshes," *Information Processing Letters*, Vol. 45, April 1993, 225-228.

Chong, K.W. and T.W. Lam, "Finding Connected Components in $O(\log n \log \log n)$ Time on the EREW PRAM," *The 1993 ACM-SIAM Symposium on Discrete Algorithms*, Austin, Texas, USA, Jan 25-27.

Farhoomand, A.F., "Strategic Implications of Electronic Data Interchange for Asian Pacific Countries," *The 1993*

Pan Pacific Conference on Information Systems, Kaohsiung, Taiwan, May 30 to June 1.

Lam, T.W., M. Tompa, and P. Tiwari, "Tradeoffs Between Communication and Space," *Journal of Computer and System Sciences*, Vol. 45, no. 3, December 1992, 296-315.

Shea, K.M., M.H. Cheung, and F.C.M. Lau, "A Technique for Fast Preemptions in a Multi-Priority Environment," *Proceedings of 16th Technical Meeting of WoTUG*, Sheffield, UK, March 1993, 155-166.

REVOLVING DOORS

Mr. I.K. Mak, our Assistant Computer Officer, recently left the Department to continue his graduate studies in Melbourne, Australia. We bid him farewell and thank him for his excellent contribution during his seven-year tenure at the Department.

Mr. Y.K. Yuen, our Computer Technician, after four years of distinguished service, is leaving the Department to join a company specializing in Japanese desk-top publishing. We thank him for a job well-done and wish him best of luck in his new job.

Dear alumna/alumnus:

We would like to hear from you. Please send us a short note telling us about your job or any other newsworthy item. We would also appreciate it if you could help us update our mailing list by sending your address to Ms. Maria Lam, Department of Computer Science, HKU, Pokfulam Road.

HKUCS NEWS

Vol. 1, No. 3

October 1993

EDITORIAL

Dr. A.F. Farhoomand
Lecturer in Information Systems

We are witnessing one of the most profound social metamorphosis in the cycle of history. To borrow from the eminent futurist, Alvin Toffler, we live in a time marked by *Powershift*: the rise of a new power system to replace the old industrial past.

What is most striking about this phenomenon is its omnipresence. From resurgence of pan-nationalistic movements all over the world to transformation of industrial economies to knowledge-based economies. From the weakening of a 500-year cycle of global domination by Western civilization to the emergence of Asia as a formidable international power broker. These *powershifts* are shaping the socio-political agenda of the next century.

Because of the fast pace of these changes, it is often difficult to gain a full understanding of their ramifications. As university students, you are expected to grasp the implications of these changes, yet you are not being taught how. As pioneers of technological innovation, you are supposed to act as agents of social change by being in forefront of these developments, yet it is not clear how.

Things seem to be even more difficult in Hong Kong because of its idiosyncratic nature: its fast pace of life, its overemphasis on materialism. Under these pressures, most students find it increasingly hard to strike a balance between acquiring marketable skills and developing a worldview conducive to independent learning. Within this context, it is easier and therefore more alluring to become a "technician" than someone who could take a global view of the ongoing developments. It is easier to focus on short-term technical problems than translate the new opportunities into tangible actions leading to long-term individual and social welfare.

Success in the emerging global economy requires a change in attitudes and pre-notions. As knowledge provides the key raw material in creation of wealth, we need to acquire

sellable skills related to collection and dissemination of information. We also need to understand the intricacies involved in conducting business in the interdependent global market. In essence, not only must we comprehend how to use information systems strategically to revamp intra- as well as inter-corporate business processes, we also need to think globally. It would be foolish to try to emulate the technical arrogance which helped weaken the domination of the West in many areas including information technology (IT). Equally absurd would be to limit our horizon, thus falling into a geographical blackhole.

East Asia has become the fastest growing economic block in the world partly due to the use of IT as a means to facilitate international trade. To achieve a long-term, sustainable strategic advantage, however, we need to further enhance our knowledge about the strategic potentials of IT and the ways with which it can turn the emerging opportunities into global competitive edge.

* * *

As you will see in this issue of *HKUCS News*, there has been a large number of activities and movements in the Department during the past four months. Noteworthy are a newly-founded Computer Science Students' Union, a new system for alumni use, an e-mail exchange program with students at Suffolk University in Boston, two new servers, numerous publications and presentations by lecturers and postgraduate students in international scholarly outlets, two new faculty members, and over \$1.75 m. in new research grants.

These developments are a part of our long-term mission of maintaining our position as a fine Computer Science Department in Asia. We count on you to help us achieve this objective by sending us your comments, feedbacks, or suggestions. In particular, we would like to hear from our past graduates, whose active participation in alumni affairs is instrumental in shaping our future directions.

HKUCS News is a newsletter published three times a year by the Department of Computer Science, The University of Hong Kong, Pokfulam Road, Hong Kong. Please submit your correspondence to the above address or via email to csnews@csd.hku.hk.

PROGRAMMING CONTEST

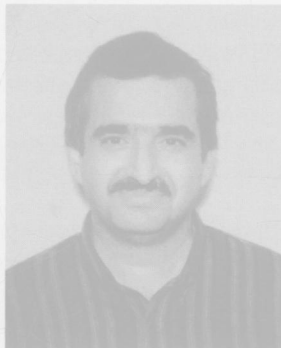
Congratulations to the HKU team consisting of Fong Siu Bong (IS III), Esprit Leung Pui Kit (CS III), Beta Yip Chi Lap (CE III) and Eric Ngok Shing Leung (CE III), who won the second place in the *ACM Scholastic Programming Contest* last July. First and third places were won by the Chinese University and HKUST teams, respectively. The coach of our team, who helped select and prepare the team, was Dr. K.P. Chan. Dr. A. Choi was in charge of the contest.

PROFILES

(Dr. Karimi and Dr. Wang joined the Department in September.)

Dr. Jahangir Karimi obtained a M.S. and a Ph.D. in MIS from University of Arizona. His primary research interests are in the areas of IS modelling, analysis, and design, software engineering, and IS strategy, planning and management in national and international environments. He has published in *IEEE Transactions on Software Engineering*, *Management Information Systems Quarterly*, *Communications of the ACM*, *Journal of Management Information Systems*, and a number of conference proceedings.

Dr. Karimi has been recognized by the *MIS Interrupt*, an International Newsletter of MIS, as one of the top five most prolific authors in IS during 1986-1991 and 1987-1992. He is an active member of the Association for Computing Machinery, the Computing Society, and the Society for Information Management.



Dr. Winpeng Wang earned his B.Sc. and M.Eng. in Computer Science from Shandong University, China, in 1983 and 1986, respectively. He obtained his Ph.D. in Computer Science from University of Alberta, Canada, in 1992. His dissertation relates to applications of rational curves and surfaces in computer graphics.

Dr. Wang has taught at Shandong University and the University of Alberta, where he was a postdoctoral research fellow before joining the Department. His research interests include computer graphics, geometric modelling, and computational geometry. He has been engaged in design of fundamental algorithms and hardware for computer graphics. At present, he is investigating problems of shape interpolation and motion control in computer animation.



COMPUTER CORNER

Mr. William Chan
Computer Officer

Recently two servers and about thirty workstations have been put into service. These servers are called *dragon* and *ns* respectively. The *dragon* is a SPARCcenter 2000 multiprocessor server equipped with four 40 MHz SuperSPARC processors, 128 megabytes of memory and 8 gigabytes of fixed storage. The *ns* is a SPARCserver 10 server equipped with a 36 MHz SuperSPARC processor, 64 megabytes of memory, and 2 gigabytes of fixed storage. Three dual-display SPARCstation LXs and twenty SPARCclassic workstations have also been added to Computing Laboratory I.

The two servers (*dragon* and *ns*) are reserved for staff use and provide support for research activities. However, the *dragon* will also serve as an NFS (Network File System) server for all students' home directories.

Because of the unexpected delay in the delivery of FDDI components, the installation of our FDDI network had to be postponed. However, we shall try our best to get it installed before the peak season. As we mentioned in the last issue, the servers, *dragon* and *sunmp*, will be on the FDDI ring and serve as major NFS servers in the Department.

The new Sun SPARC workstations including SPARCstation LX and SPARCclassic are all equipped with a 50 MHz MicroSPARC processor. They are significantly faster than their predecessors, the SPARCstation IPC workstations. Programming work such as compilation can be accomplished fairly quickly on these workstations without having to log into other servers such as *sunmp* which runs slower than your workstation in terms of CPU benchmarks.

(continued on Page 3)

STUDENTS AFFAIRS

Congratulations to the following students for their outstanding academic achievements:

<u>Name</u>	<u>Scholarship, Medal, Grant</u>
Ms. Choi Ying (M.Phil.)	Swire Scholarship 1993-94 to subsidize residence in the Robert Black College.
Miss Fung Wing Yi (CS I)	Ho Fook Prize in Engineering for outstanding performance in the 1993 exams.
Mr. Lam Pei Fung (CS I)	Walter Brown Memorial Prize in Mathematics for outstanding performance in the 1993 exams. Joyce M. Kuok Foundation Scholarship 1992-93.
Mr. Lee Ka Hing (Ph.D.)	Swire Scholarship 1993-94 to subsidize residence in the Robert Black College.
Mr. Lee Tsak Ting (CS III)	Chan Kai Ming Prize for outstanding performance in the 1993 exams. HKU Alumni Prize 1992-93 for performance as the most outstanding graduating student in CS.
Mr. Loong Ho Sang (M.Phil.)	Conference grant to attend the <i>Second International Conference on Computer Communications and Network (IC3N)</i> held in San Diego, California, USA, June 28 - 30, 1993.
Mr. Shea Kai Ming (Ph.D.)	Swire Scholarship 1993-94 to subsidize residence in the Robert Black College.

RESEARCH

Chan, K.F. and T.W. Lam, "Finding Least-weight subsequences with fewer processors," *Algorithmica*, 9, 615-628, 1993.

Chan, M.Y. and F. Chin, "Schedulers for Larger Classes of Pinwheel Instances," *Algorithmica*, 9(5):425-462 (May 1993).

Chan, M.Y. and F. Chin, "Optimal Resilient Distributed Algorithms for Ring Election," *IEEE Transactions on Parallel and Distributed Systems*, 4(4):475-480 (April 1993).

Cheung, M.H., K.M. Shea, and F.C.M. Lau, "Preemptive Scheduling of Multi-Priority Processes in Transputer," *Proceedings of World Transputer Congress*, Aachen, Germany, 887-889, September 1993.

Shea, K.M. and F.C.M. Lau, "Experimentation with a Software Virtual Link Mechanism," *Proceedings of 5th Transputer/ Occam International Conference*, Osaka, Japan, 211-223, June 1993.

Tse, T.H., "Formal or informal, practical or impractical: towards integrating formal methods with informal practices in software engineering education", in *Software Engineering Education: Proceedings of IFIP WG 3.4 Working Conference*, B.Z. Barta *et al.* (eds.), North-Holland, Amsterdam (1993).

(continued from Page 2)

COMPUTER CORNER

Ten more PC/486s will be acquired shortly to further ease the competition for use of PCs. The PCs in Computing Laboratory III will all be fully configured PC/486, with 33 MHz CPU, at least 8 megabytes of memory, 170 megabytes of hard disk drive and VGA colour display. A PC/486, host name HKUCSD2, running Novell Netware 386 will serve as a file and print server for all PC stations. Major application software packages such MS Word for Windows, WordPerfect for Windows, MS Excel, Quadro Pro, and dBASE and FoxPro are available from the server HKUCSD2. The HKUCSD2 also serves as an FTP server that provides anonymous access. From now on most of the public domain PC software will be put on HKUCSD2 instead of on our UNIX filesystems.

In order to further improve our consulting services, we have hired two Student Technicians, Mr. Carl Y.P. Yau (yypau@csd) and Mr. W.K. Yu (wkyu@csd). They are currently undertaking their postgraduate studies in the Department. They will be on duty 1:00 p.m. to 5:00 p.m., Monday to Friday, and 9:00 a.m. to 1:00 p.m. on Saturdays. Their duties include handling regular queries on use of computer equipment, providing support for application software packages as well as maintaining the public domain software archives in the /pub directories.

NEWS

Dr. C. Chan is invited as a keynote speaker at the *International Conference on Neural Networks and Signal Processing* to be held in the South China University of Technology, Guangzhou, Nov. 2-5, 93. He was also invited to attend the *Eurospeech '93* held in Berlin, Germany, Sept. 21-23.

Prof. F. Chin will be the Program co-chairman of the *5th International Hong Kong Computer Society Database Workshop* to be held in Hong Kong, Feb. 25-26, 1994. In addition, he is one of the organizers for an *International Workshop on Discrete Mathematics and Algorithms* to be held at the Robert Black College, HKU, Dec. 13-14, 1993. This workshop is financially sponsored by the Croucher Foundation and organised by the Department. The Workshop aims to bring together researchers working in various interdisciplinary areas of discrete mathematics and theoretical computer science. Prof. Chin was also invited as a speaker for the *9th Joint School Electronics and Computer Exhibition* - topics on "Revelation: Innovation and Elaboration of Electronics and Computer in HK" in Aug. 1993.

Dr. A. Farhoomand was selected by Hong Kong Productivity Council to act as the national expert for Hong Kong in a survey on *Applications of IT in National Development*. A coordination meeting, sponsored and funded by Asian Productivity Organization, was recently held in Manila to discuss telecommunications policies adopted by different countries in the region. This month, Dr. Farhoomand was also invited by Department of Computing of Hong Kong Polytechnic to discuss cross-cultural issues of IS research.

Dr. F.C.M. Lau has been invited to serve on the Program Committee of *International Conference on Data and Knowledge Systems for Manufacturing and Engineering* to be held in Hong Kong in May 1994. Dr. Lau has also been collaborating with Dr. A. Yeh of CUPEM (Centre for Urban Planning and Environmental Management) and Professor N. Lee of SPACE on producing an interactive multimedia presentation to be used during the HKU's 2001 Exhibition in November. The presentation is about Hong Kong and the Pearl River Delta, and will feature some of the latest, most advanced software and equipment by Apple and other companies. Dr. Lau heads the production team for this project. The programming is done by Joseph Lee Kwok Wai, a past graduate of the Department.

Dr. T.H. Tse has been re-elected as a Vice Chairman of the Rehabilitation Alliance Hong Kong for the session 1993-95, appointed as an External Examiner for the Department of Computer Studies, Lingnan College, and selected as a Programme Committee Co-chair of the *Workshop on Industrializing Formal Specification Techniques* to be held in Florida in April 1995. Dr. Tse also attended the *IFIP WG 3.4 Working Conference on Software Engineering Education* held on Sept. 28 - Oct. 2, 1993 as a Session Chair and a Programme Committee Member. In addition, Dr. Tse attended the Executive Committee meeting of the *IEEE Technical Committee on Software Engineering* held in Baltimore, Maryland where he also attended the *15th International Conference on Software Engineering*, May 19-21, 1993.

Alumni Affairs

We were overwhelmed by the positive responses to our announcement in the last issue of *HKUCS News* concerning the setting up of an alumni machine. Unfortunately the donated computer proved to be faulty and therefore unoperational. As soon as the replacement computer arrives, we will set up your accounts. In the meantime, we will try to provide you with some more dial-in lines. Should you have any enquiries or suggestions, please feel free to contact Dr. Francis Lau at fcmlau@csd.hku.hk.



Congratulations to our 1993 graduating class.

GRANTS

The Hong Kong Research Grants Council (RGC) recently announced the following successful applications from the Department for Competitive Bids' Research Grant Awards 1993/94.

<u>Name</u>	<u>Title</u>	<u>Amount</u>
Dr. C. Chan	Bayesian learning of HMM parameters for speech recognition	\$266,000
Dr. F.C.M. Lau	A study of load balancing and communication balancing in multicomputers	\$266,000
Dr. W.W. Tsang	Development of a radiosity engine	

The Committee on Research and Conference Grants (CRCG) recently awarded the following Research Grants:

<u>Name</u>	<u>Title</u>	<u>Amount</u>
Dr. C. Chan	Segmentation of connected speech before recognition	\$81,865
Dr. W.H. Cheung	Development of a network protocol infrastructure	\$62,940
Dr. A.K.O. Choi	Fast geometric algorithms for image analysis	\$101,960
Dr. A.F. Farhoomand	A longitudinal study of IT adoption and assessment process	\$86,940
Dr. T.W. Lam	On the parallel time complexity and the space complexity of undirected connectivity	\$83,920
Dr. F.C.M. Lau	Parallel processing for efficient photorealistic building walkthroughs	\$112,940
Dr. T.H. Tse	Functional object-oriented design (FOOD)	\$103,410

The Committee on Research and Conference Grants (CRCG) recently awarded the following Conference Grants:

<u>Name</u>	<u>Conference</u>
Dr. W.H. Cheung	TENCON '93/Beijing, Beijing, China, Oct. 19 - 21, 1993.
Dr. J.B. Evans	European Simulation Symposium, Delft, The Netherlands, Oct. 25 - 28, 1993.

REVOLVING DOORS

Dr. Y. Han recently left the Department for the U.S.A. We wish him good luck in his new endeavours.

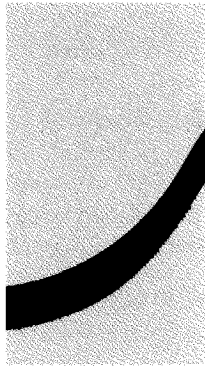
We welcome **Dr. J. Karimi** who joined the Department in September. Dr. Karimi's area of specialization is Management Information Systems (please see his Profile on Page 2).

A warm *welcome back* to **Dr. K.H. Pun** who just returned from his long leave at University of London, where he obtained a LLM degree within one year. Next semester, Dr. Pun will be offering a new course in *Legal Aspects of Computing*, giving our Department the distinction of being one of the few institutions in Asia offering such a course.

Dr. O. Shivers recently left the Department to join Massachusetts Institute of Technology. We wish him good luck in his new job, and thank him for his contributions during his year-long stay in Hong Kong.

Dr. W.W. Tsang is on long leave in the current academic year. We wish him a rewarding and productive year.

We welcome **Dr. W. Wang** who joined the Department in September. Dr Wang's research interests include computer graphics, geometric modelling, and computational geometry (please see his Profile on Page 2).



THE UNIVERSITY
OF HONG KONG

THE SOFTWARE ENGINEERING GROUP

THE PHILOSOPHY

Object-oriented analysis and design methodologies are considered to be the most influential software engineering methods for the 1990s. They help to specify systems in a graphical manner, enabling software engineers to visualize the requirements and communicate with users easily. The graphical tools are mostly based on the popular notations in entity modelling and structured analysis, but are more comprehensive and in an integrated context. The transition from analysis to design to implementation is less drastic than structured methodology.

There is, however, a common drawback among OO methodologies. They have been developed informally and are not supported by any formal syntax or semantics. There is no means to guarantee either the consistency of a specification or a smooth transition to the implementation phase of software development. Most of the guidelines suggest iterations of undoes and redoes when the outcome is not satisfactory. Environments for supporting the methodologies are developed in an 'evolutionary' approach because method designers are not aware of any fundamental problems in the tools until they are tried in real life and bugs are found.

On the other hand, a number of formal specification languages have been proposed, helping users to verify the correctness of the specification and implementation. Because of the formal syntax and semantics behind the specifications, programs can be developed with a high degree of confidence. Systems can be debugged, maintained and reused much more easily. Unfortunately, practitioners are quite reluctant to use these formal tools because unfamiliar mathematical concepts and languages are involved.

Our projects attempt to bridge the huge gap between formal methods and the popular methodologies. Instead of trying to hardsell the unpopular formal tools, we propose theoretical foundations for existing methodologies. The well-accepted graphical notations are maintained, thus relieving users from the need to learn an alien set of mathematical symbols. The users' experience on object-oriented analysis will not be wasted. In this way, our projects provide an insight to software engineers on object-oriented development, and open up a range of applications for theoretical computer scientists. Feedback has been most encouraging.

THE PRAGMATICS

You are invited to join the Software Engineering Group as postgraduate students, Senior Research Assistants and/or Research Assistants. We have been successful in conducting a number of projects in bridging the gap between formal methods and popular software development methodologies. We have joint projects with the University of Oxford, York University, University of Melbourne and Jinan University. We have been awarded fundings of about \$2,500,000 from various sources such as the Research Grants Council, the University and Polytechnic Grants Committee, the Science and Engineering Research Council, the Association of Commonwealth Universities, the Committee on International Cooperation in Higher Education, the International Conference on Information Systems, and the Hong Kong and China Gas Research Fund. More than 50 refereed international publications have been produced.

The following is a list of our current projects. If you are interested, please contact the principal investigator, Dr. T.H. Tse, at tse@csd.hku.hk.

ALPSE	Application of Logic Programming to Software Engineering (joint work with Dr. T.Y. Chen of University of Melbourne and Professor H.Y. Chen of Jinan University)
COD	A Communicating Objects Design Model (joint work with Dr. Jeremy Jacob of University of Oxford and York University)
DPD	Dynamic Programme Dicing (joint work with Dr. T.Y. Chen of University of Melbourne)
FOOD	Functional Object-Oriented Design (joint work with Professor Joseph Goguen of University of Oxford)
NOODLE	A Net-based Object-Oriented DeveLopment Environment
OOT	Object-Oriented Testing
SAD_FACT	A Structured Analysis and Design Framework using Algebraic semantics and Category Theory

hkucs news

February 1994, Vol. 2, No. 1

Published three times a year by Department of Computer Science, The University of Hong Kong

Taking Stock

Dr. Ali F. Farhoomand
Lecturer in IS

Happy New Year! As we enter the second year of publication of *HKUCS News*, it is a good time to take stock of the major events of the past year and to give some thought to the emerging issues shaping the future.

Information Technology Trends

In the information technology (IT) arena, PCs and workstations continued to replace mini-computers and mainframes. For example, in the U.S. it is expected that the sales of PCs and workstations will surpass over 60% of all IT hardware sales in 1994 (*International BusinessWeek*, Jan. 1994). In contrast, mainframes and minis sales will further shrink to less than 20% of the total. Telecommunications hardware will account for the remainder. Thanks to a new generation of powerful microprocessors, notably IBM's PowerPC chip, DEC's Alpha chip, and Intel's Pentium, it seems that we are witnessing the end of the end for big iron! In 1993 U.S. sales of PCs reached 15 million units, up 26% from 1992. With proliferation of multimedia systems, we should see further increase in the sales of PCs in the coming years.

Professional Designation

The debate over the establishment of a profession of software engineering and the creation of a professional information systems (IS) society continued in 1993. According to Professor Michael Evangelist, a broad-thinker in software engineering and Director of School of Computer Science at Florida International University, apart from correctness, the important issues for contemporary software systems are not scientific but rather the classical engineering concerns of utility, economy, reliability, and safety. Increased focus on professionalism for software engineers would ben-

efit not only the industry but also the research and educational communities.

The creation of a professional IS society also came closer to reality in 1993. Professor William King, an ex-president of The Institute of Management Science (TIMS) and a past Senior-Editor of *MIS Quarterly*, along with several other prominent researchers from universities around the world is the driving force behind this initiative. The establishment of such an association should further entrench the status of IS within the academic and business communities.

On Our Own Home Front

In 1993 we initiated a large number of changes in our Department. We revised the curriculum of our M.Sc. program and expanded its offerings to full-time studies, streamlined the software engineering courses, significantly upgraded our computer facilities, and revamped our undergraduate and postgraduate IS programs. Next year we will expand the undergraduate, M.Phil. and Ph.D. programs in IS.

We have been making these improvements partly in response to technological advancements and the market demands. More importantly, however, these ongoing developments are an integral part of our long-term mission to offer academically sound, yet commercially viable programs, both at the undergraduate and postgraduate levels. In view of the practical and dynamic nature of our programs, we will continue to strike a well thought-out balance between academic rigour and market needs. We believe that the success of our students as the graduates in highest demand in Hong Kong has mainly been based on such a balance. This success is something which we will steadfastly strive to sustain.

This issue

Profiles	2
News	2
Research	3
Grants	3
Scholarships	3
Computer Corner	4
Introspection	4
Postgraduate	4
Studies	

Profiles

Dr. Bethany M.Y. Chan has taught at the Chinese University of Hong Kong, The University of Hong Kong and the University of Texas at Dallas. She is currently Assistant Director in the research department at Worldsec International Limited, a brokerage firm. She has refereed for a number of journals including the *SIAM Journal on Computing*, *SIAM Journal of Discrete Mathematics*, *Journal of the ACM*, *IEEE Transactions on Computers*, *IEEE Transactions on Parallel and Distributed Systems* and the *Journal of Parallel and Distributed Computing*. Her research interests are in algorithms for embedding various graphs in faulty and non-faulty hypercubes and hypercube-derivative networks. She has supervised over fifteen M.Sc. students and one Ph.D. student. Dr. Chan was recently reappointed as an *Honorary Lecturer in Computer Science* for the period between Jan. 1st, 94 to Dec. 31st, 96. She can be reached via mychan@csd.



Dr. David Wai-lok Cheung earned his B.Sc. in Mathematics from The Chinese University of Hong Kong. He obtained a M.Sc. and a Ph.D. in Computing Science from Simon Fraser University, Canada. Dr. Cheung has worked in Bell Northern Research, Ottawa, Canada, before coming back to join The University of Hong Kong. At Bell Northern he was a senior designer working on the Intelligent Network System designed

to support a nation-wide telephone network for many advanced communications applications. Dr. Cheung's research interests include knowledge discovery in databases, database mining, multi-layer databases, cooperative and intelligent queries, intelligent database browsers, and object-oriented databases and their applications in multimedia systems. He is also interested in Program Understanding and Program Maintenance. Dr. Cheung joined the Department as a *Lecturer in Computer Science* this January. You can contact him via dcheung@csd.



Dr. Hing-fung Ting obtained his B.Sc. in Computer Science from the Chinese University of Hong Kong in 1985 and a M.Phil. in Computer Science from the University of Hong Kong in 1987. He obtained his Ph.D. in Computer Science from Princeton University in 1992. Before joining the department, he was a lecturer in the Chinese University of Hong Kong. His research interests include design and analysis of distributed algorithms, communication complexity and circuit complexity. Dr. Ting joined the Department this January as a *Lecturer in Computer Science*. You can contact him via hting@csd.



News

Dr. C. Chan was the keynote speaker of the *Inter'l Conf. on Neural Networks and Signal Processing* held in Guangzhou in Nov. 1993.

An *Inter'l Symposium on Speech, Image Processing, and Neural Networks* sponsored by the IEEE HK Section, Signal Processing Chapter will be held at the Hong Kong Convention and Exhibition Centre, April 14-15, 1994. Students can register for this Symposium at a special rate. For more information please contact **Dr. C. Chan** via cchan@csd.

Digital Equipment Corporation and the Speech Laboratory are launching a joint project to develop a continuous Putonghua recognizer over the next 3 years. DEC will donate a Jansen Alpha workstation (a 27 MFlop Linpack benchmark machine) to support this development. Upon the completion of the project, DEC has the option to acquire or license the technology developed on this platform. For more information please contact **Dr. C. Chan** via cchan@csd.

Prof. F.Y.L. Chin has been invited to give a lecture at the ACM Chapter of Japan inaugural symposium to be held in Tokyo from March 7-9, 1994.

Dr. Jeremy Jacob (M.Sc. and D.Phil., Oxford) of the Computer Science Department of the University of York recently visited our Department for a period of four weeks.

Dr. T.H. Tse has been selected Programme Committee Co-chair of the *Workshop on Industrializing Formal Specification Techniques* to be held in Florida, U.S.A., in April 1995.

Dr. T.H. Tse attended the international workshop on *University Curriculum in Software Technology*, organized by the International Institute for Software Technology of United Nations University and held in Beijing, November 14-20, 1993. He was invited to give a talk on the integration of formal and informal methods in software engineering.

Research

M.Y. Chan, F.Y.L. Chin, C.N. Chu and W.K. Mak, "Dilation-5 Embedding of 3-Dimensional Grids into Hypercubes," *Proc. of the 5th IEEE Symposium on Parallel and Distributed Processing*, Dallas, Texas, Dec. 1993.

F.Y.L. Chin and M.Y. Chan, "A Parallel Algorithm for an Efficient Mapping of Grids in Hypercubes", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 4, No. 8, pp. 933-946, Aug. 1993.

A.F. Farhoomand and P. Boyer, "Barriers to Electronic Trading in Asia Pacific," forthcoming in *EDI Forum: The Journal of Electronic Data Interchange*, special edition on Europe and Pacific Basin, 1994.

A.F. Farhoomand and P. Boyer, "A National Strategic Development Planning Model for Electronic Data Interchange," *Proc. of the 27th Hawaii Inter'l Conf. on Systems Sciences*, IEEE Computer Society Press, 1994.

Q. Huo, C. Chan and C.H. Lee, "Bayesian Learning of the Parameters of Discrete and Tie-mixture HMMs for Speech Recognition," *Proc. of EUROSPEECH'93*, Berlin, 1993.

H.F. Leung and H.F. Ting, "An Optimal Algorithm for Global Termination Detection in Shared-Memory Asynchronous Multiprocessor Systems," *Proc. of the Internal Conference on Parallel and Distributed Systems*, 1993.

H.F. Ting and A.C-C Yao, "A Randomized Algorithm for Finding Maximum with Polynomial Tests," forthcoming in *Information Processing Letter*.

T.H. Tse, T.Y. Chen, and C.S. Kwok, "The Use of PROLOG in the Modelling and Evaluation of Structure Charts," *Information and Software Technology*, 36 (1994).

J.X. Wu and C. Chan, "Isolated Word Recognition by Neural Network Models with Cross-Correlation Coefficients for Speech Dynamics," *IEEE Transactions on PAMI*, Vol. 15, No. 11, pp. 1174-1185, Nov. 1993.

J.X. Wu and C. Chan, "Training a Gamma Network for Phoneme Recognition," *Proc. of International Conference on Neural Networks and Signal Processing*, pp. 357-362, Guangzhou, Nov. 1993.

Conference Grants

Dr. C. Chan was awarded a RCG to attend *International Conference on Acoustics to be held in Adelaide, Australia*.

Mr. Chen Li (Ph.D. student) was awarded a Conference Grant for Higher Degree Research Student to attend 1994 *International Symposium on Circuits & System* to be held in London, U.K.

Dr. A.F. Farhoomand was awarded a RCG to attend the 1994 *Hawaii International Conference on System Sciences*.

Mr. Kelvin Kwan (Ph.D. student) was awarded a Conference Grant for Higher Degree Research Student to attend *Artificial Life IV* to be held in Cambridge, MA, U.S.A.

Mr. Lee Ka Hing (Ph.D. student) was awarded a Alumni Association grant to attend *Italian Conference on Algorithms on Complexity*.

Scholarships

Congratulations to the following students whose academic achievements were recognized through obtaining various scholarships for the academic year 1993-1994:

<u>Name</u>	<u>Scholarship</u>
Mr. Chan Kin Wah (CS III)	Joyce M. Kuok Foundation Scholarships
Mr. Chung Tat Leung (CS III)	Etta Trading Co. Scholarships, AST Scholarship
Miss Fung Wing Yi (CS II)	Etta Trading Co. Scholarships, Information Technology Management Club Scholarship
Mr. Lam Pei Fung (CS II)	Joyce M. Kuok Foundation Scholarships
Mr. Ma Jin Ming (CS III)	Joyce M. Kuok Foundation Scholarships
Mr. Sun Yue Man (M.Phil)	IEE Award, Croucher Foundation Studentship

Computer Corner

During the last several months the following staff have joined our Technical Support group:

Mr. Taylor Cheng, Assistant Computer Officer
Mr. Daniel Hung, Assistant Computer Officer
Mr. William Sin, Computer Technician
Ms. Grace Tin, Clerk

We welcome them aboard and wish them success in their new jobs.

Did You Know

... that based on the 1993-94 admissions statistics published by the Joint Universities and Polytechnic Admissions Scheme (JUPAS) our Computer Engineering, Information Sys-

tems and Computer Science programs attract some of the best students applying to *all* departments in *all* the tertiary institutions in Hong Kong?

Introspection

Dr. John Evans
Lecturer in
Computer Science

We have introduced this column as a forum to exchange your ideas, bring forth controversial issues or simply express opinions about current affairs. If you would like to contribute to this column, please send your submissions to HKUCS News. We particularly welcome contributions from our students and alumni.

In this inaugural column, Dr. J. Evans reflects on the concept of Artificial Life. Ed.

Although I have been involved in simulation research for many years (probably too many) I have recently felt an impulse to branch out into something new. Actually Artificial Life is not an entirely new departure for me as I started out being interested in simulation through an investigation of the computational possibilities of the neural circuitry of the retina. Nowadays this would come under the heading of the simulation of neural networks, and part of my thesis will be that life is a kind of 'intelligent' matter, so I suppose I am not really leaving simulation.

Artificial Life complements the traditional biological sciences -- concerned with the analysis of living organisms -- by attempting to synthesize, within computers and other "artificial" media, phenomena normally associated with natural living systems. By extending the foundation upon which the science of biology rests beyond the carbon-based life that has evolved on earth, Artificial Life can contribute to Theoretical Biology by locating "life-as-we-know-it" within

a larger context of "life-as-it-could-be".

The approach to be taken is to define cellular automata which will be capable of changing according to certain transition rules which themselves come under the influence of the actions and interactions of the automata. The base rules correspond to the physical laws, and the interactions are the tendencies under which physical forms evolve. Being inherently non-ergodic, such systems are not susceptible to analysis by statistical means and are capable of exhibiting emergent behaviour which arises from their development. Life is thus defined as those automata with changing rules which survive selection within a particular environment.

If successful the cellular automata approach will offer theoretical support for various current applications of computing being pursued in the fields of neural networks, genetic algorithms and computation theory. The implications might be a more fundamental understanding of leading, speciation and morphogenesis.

Postgraduate Studies

If you are interested in obtaining a M.Phil. or a Ph.D. degree in Computer Science or Information Systems, why don't you pick up an application package from the General Office of Computer Science Department

(Room 824, Knowles Building)? The deadline is March 15, 1994. Those who are interested in the M.Sc. in Computer Science should contact the Academic Secretariat at 859-2432.

hkuCS news

June 1994, Vol. 2, No. 2

Published three times a year by Department of Computer Science, The University of Hong Kong, Pokfulam Rd, HK, Email csnews@csd.hku.hk

A Question of Ethics

Dr. A.F. Farhoomand
Lecturer in IS

Maintaining high ethical academic standards is not possible unless the University community as a whole, including administrators, lecturers, as well as *all* students, assumes responsibility to uphold and promote these principles uncompromisingly.

We need to revamp the existing University regulations pertaining to plagiarism by unambiguously outlining the consequences of misconduct. We also need to steadfastly enforce these regulations. Most importantly, as knowledge is increasingly becoming indivisible we need to incorporate ethics into the various curricula taught in the University in order to heighten students' awareness of the emerging ethical issues. The student body needs to better understand the moral and practical ramifications of plagiarism, cheating or copying of assignments.

From the beginning of cultural history, philosophers in every civilization have tried to examine the percepts that constitute one's moral fibre. Some have thought that human beings do the right thing for its own sake because we are strongly driven by moral virtue. Others have argued that our social conduct is chiefly governed by learned deterrents, such as fines and penalties, without which controls we would turn into creatures of violence and chaos. Irrespective of where the origin of ethical behaviour lies in this debate, the individual's moral sense remains central to the development of civilized societies.

Like other citizens, students are expected to be responsible both morally and socially by respecting the ethical norms established

by society. They are also expected to act as guardians and promoters of the mores embodying the Academy. In this context, students have the dual responsibility of not only practising ethical behaviour themselves, but also ensuring that the ethical standards of the university where they study are not compromised by others.

Plagiarism and cheating are unacceptable actions that seriously thwart this stewardship; they undermine the basic fibres that meld our universities into harmonious and valued environments.

Furthermore, condoning unethical conduct negates the code of ethics of different professional organizations such as the *Data Processing Management Association*, which states: "In recognition of my obligation to my fellow members and the profession, I shall take appropriate action in regard to any illegal or unethical practices that come to my attention."

To some students the temptation of bypassing what they are duly expected to learn has proven at times to be too alluring to resist. Project deadlines, heavy course work, or family commitments exemplify some of the easy justifications for plagiarism. Even worse is the attitude that "Everybody does it therefore it's o.k." What initially may seem to be the innocuous copying of an assignment by a group of students, then, becomes an academic and emotional drainage for the culprits as well as for those who must deal with the case. These are the dysfunctional consequences of plagiarism from a practical point of view.

(continued on next page...)

This Issue

<i>Profile</i>	2
<i>Research</i>	3
<i>News</i>	3
<i>Did You Know . . .</i>	3
<i>Putonghua Corpus</i>	5
<i>Grants</i>	5
<i>Dressed for Success</i>	6

Profile

Dr. Chorkin Chan, a Senior Lecturer in our Department, who was born and brought up in Hong Kong, studied at the Queen's College, Causeway Bay.

After getting his first degree in Mathematics from the National Taiwan University, he furthered his study in Canada and got his Ph.D. degree in Physics from the University of British Columbia. He worked for IBM and the University of Victoria before joining the University of Hong Kong.

Ever since he came back to Hong Kong, he started his research on the problem of man-machine interface in speech and writing. Specifically, he has been conducting research in the areas of the recognition and synthesis of Putonghua and Chinese characters, as well as fundamental research on the modelling of speech signals. Over the past 15 years, he has built a strong research team.

His group, who works on speech and character recognition, is equipped with workstations, databases and software systems.



Dr. Chan is probably most noted for his experience in attracting young researchers from China to work at HKU. So far, three Ph.D.s have graduated and returned to China. One has just left for Canada as a post-doctoral fellow and another one has been invited to join the MIT Lab. for Computer Science as a research scientist. The third one will be going to France as a research fellow this summer. Dr. Chan believes that the most important principle of supervising Ph.D. students is to teach them how to identify and solve problems independently.

Editorial cont'd...

A lecturer who has been trained to teach and research in an academic field usually has neither the expertise nor the desire or the time to deal with not-to-infrequent cases of cheating. The same constraints apply to heads of departments, deans and other university administrators. Their time can definitely be used better by focusing on other pressing academic or administrative issues concerning the students. In the delicate and difficult process of dealing with cases of academic misconduct, not only are university resources wasted, but more significantly, the trust which binds students and the teacher is jeopardized.

In the long-term, however, it is the university as a whole, and more particularly the student body, who suffers. Those who unethically pass through the academic trail will always carry the burden of their undeserved credit either because of not being able to carry out their future jobs or because of having made a bad habit that may implicate them in future

unscrupulous practices in the workplace. Old habits die hard!

Unfortunately, the majority of students whose only fault is their apathy toward plagiarism are also affected adversely. As news of such unethical behaviour among students spreads out into the business community, potential employers will likely become sceptical about the general academic qualifications and ethical stance of the student body as a whole.

Plagiarism is *not* o.k. because it is rampant. It is *not* o.k. because some people who are implicated are our friends. Camaraderie calls for a decisive stance even against a wrong committed by a friend. Participating in plagiarism is unequivocally wrong, academically and ethically. Silently standing by and impassively condoning it are also equally wrong.

Academic conduct is not a relative or an endemic issue subject to interpretation. It is simply a question of ethics.

Research

Karimi, J. and C. Carpenter, "A Partitioning Technique for Concurrent Software Design," forthcoming in *The Journal of Systems and Software*.

Tse, T.H., T.Y. Chen, F.T. Chan, H.Y. Chen and H.L. Xie, "The Application of Prolog to Structured Design," *Software: Practice and Experience*, 24 (1994).

Wong, Y.S. and A. Choi, "A Two-Level Model-Based Object Recognition Technique," *Proceedings of the International Symposium on Speech, Image Processing and Neural Networks*, Hong Kong, April 14-16, 1994.

Xu, C.Z. and F.C.M. Lau, "Decentralized Remapping of Data Parallel Computations with the Generalized Dimension Exchange Method," *Proceedings of 1994 Scalable High Performance Computing Conference*, Knoxville, Tennessee, May 1994. 414-421.

Yiu, S.M. and A. Choi, "Edge Guards on a Fortress," forthcoming in *Proceedings of the Sixth Canadian Conference on Computational Geometry*, Saskatoon, Saskatchewan, Canada, August 2-6, 1994.

News

Dr. F.C.M. Lau was recently nominated to be a candidate for Governorship for IEEE Computer Society, one of the largest computer societies in the world, with approximately 10,000 members worldwide. Election by voting to be held in August 1994.

Dr. T.H. Tse has been invited to serve on the programme committee of the following international conferences:

18th IEEE Annual International Computer Software and Applications Conference, 1994; 1st Asia-Pacific Software Engineering Conference, 1994; 3rd IFIP WG 8.1 International Working Conference on Information System Concepts, 1995; 1st IPIP WG 3.4 and WG 5.4 International Working Conference on Software Quality and Productivity, 1995

Dr. T.H. Tse was invited to present a full-day short course on an Introduction to Object-Oriented Analysis for the International Institute for Software Technology, United Nations University on 19 March 1994.

Did You Know That . . .

According to Money magazine, computer analysts have the best jobs in America. Ranking 100 jobs in terms of earnings, long- and short-term job growth, job security, prestige rating, and "stress and strain" rating, the magazine says the top ten jobs are computer systems analyst, physician, physical therapist, electrical engineer, civil engineer, pharmacist, psychologist, geologist, high school teacher, school principal. Budget cutting at colleges and universities took a toll on some of the scientific careers that dominated the list two years ago. (Money 3/94, p. 70)

Women love the geometric video game Tetris, and game-makers are dying to find out why. While 99% of the buyers for most other games are male, 40% of Tetris buyers

are female. One theory is the appeal of the game's goal, which is to bring order to chaos, resulting in neat little rows of geometric shapes. Women crave order, hypothesizes a sociologist hired by Nintendo to unravel the riddle, and by beating the clock on the game, a woman experiences a rush of endorphin — "feel good" chemicals produced by the body under stress. (Wall Street Journal, 5/10/94)

According to the Computer Law Association, in selecting a password you should not choose any word in the dictionary, or one that relates to you personally. Instead you should use a password with at least eight characters that has a mix of numbers, upper- and lower-case letters, and if possible special characters. (Bottom Line Personal, 6/1/94)

(continued on next page...)

***Did You Know
That (cont'd) . . .***

Traffic on the National Science Foundation backbone grew by a stunning 20.7 percent during the month of March. The total monthly volume was nearly 2 Terabytes, representing one billion e-mails. Gopher traffic grew by 17.6 percent and http (WWW) grew by 32.9 percent to a new total of half a Terabyte per month. (Internet Society)

A Gallop poll has found that fax transmission account for 36 percent of telephone bills at Fortune 500 companies in the U.S.A. E-mail has made little headway in being used routinely for corporate communications, in spite of its considerable cost advantage. Advanced Network Services says that a one-page e-mail message sent by network costs less than U.S. 2 cents, compared to U.S. 29 cents for a letter sent by mail and an even higher cost for a fax message. (New York Times, 4/19/94 C3)

According to the New York Times, hostility and aggression are spreading in cyberspace. A rash of newcomers in the last year or two has undermined the tradition of rational self-government and the democratic exchange of ideas. A University of California at San Diego professor observes, "If such events become routine — and there's very little technical or legal reason why they won't — then the whole net will basically collapse through flame-wars, the closing of e-mail discussion groups to outsiders and whatever." (Tampa Tribune, 5/15/94 B2)

Campuses are increasingly dealing with computer-originated crime and mischief. These include everything from bomb and death threats, to racist and sexual harassment, to forged messages such as one at Dartmouth that caused students to believe an important exam was cancelled. (Chronicle of Higher Education, 5/25/94)

IBM has demonstrated an optical disk technology that could produce CDs holding about 6.5 Gigabytes of data, by storing information on up to 10 layers on the disk, with each layer readable by having the laser

beam individually focused. (New York Times, 5/13/94 C4)

Almost one of every three households in the U.S. has a personal computer, and 65% of computer users say they would miss their machine "a lot" if they no longer had it. (Atlanta Journal-Constitution, 5/24/94)

Market research firm Channel Marketing projects that 109 million computers will be sold in the U.S. in 1999, and that by that time American households will on average have 2.5 PCs. (Atlanta Journal-Constitution, 5/15/94)

According to a U.S. Commerce Department study, business and consumer spending on high-tech equipment accounts for 38% of economic growth since 1990. Meanwhile, earnings for male computer programmers have risen by 12% since 1990, compared to 6% for all male workers, and female programmers' wages are up a whopping 21%, vs. 13% for all female workers. (Business Week, Special 1994 Bonus Issue, p.22)

A student group at Pennsylvania State University has found a new use for old computers. They donate them to elementary and secondary schools in rural and inner-city areas. The group makes sure the units are in working condition and that compatible machines are shipped to each location. (Chronicle of Higher Educ 5/18/94 A19). (Now here is some food for thought for our resourceful Hong Kong students to do the same for their mainland counterparts).

The University of Waterloo in Canada is designing a new advanced undergraduate course to be taught by IS faculty to engineering students on the "Impact of IT on Society". (Infosys, 16/6/94)

(Editor's note: the IT news items on this column are compiled from the electronic bulletin, Infosys.)

A Putonghua Corpus

*Dr. C. Chan
Senior Lecturer in
Computer Science*

A speech corpus of over 3 Gigabytes of data fully transcribed orthographically and spoken by 20 native Putonghua speakers is now available in the Speech Lab. of the Computer Science Department. This corpus, which cost over a quarter of a million dollars to build, is now available for other research institutes at HK\$5,000 a copy. The corpus contains the following:

- A sub-corpus of isolated syllables phonetically balanced
- A sub-corpus of 16 digit strings that includes all the triphones between digits
- A sub-corpus of 11 words that exhaust all the Putonghua phones which serves as a convenient adaptation database
- A sub-corpus of rhymed syllable strings that serve the same purpose as the E-set of the Latin alphabet for speech recognition
- A large collection of read news.

Grants

<u>Name</u>	<u>Conference Grant</u>	<u>Place</u>
Dr. K.P. Chan	IEEE Int'l Conference on Fuzzy Systems	Orlando, USA
Dr. D.W.L. Cheung	8th Int'l Symposium on Methodologies for Intelligent Systems	Charlotte, USA
Prof. F.Y.L. Chin	5th Int'l Symposium on Algorithms and Computation	Beijing, China
Dr. K.P. Chow	Second Singapore Int'l Conference on Intelligent Systems (SPICIS'94)	Singapore
Dr. J.B. Evans	European Simulation Multiconference	Barcelona, Spain
Dr. A. Farhoomand	28th Hawaii Int'l Conference on System Sciences	Maui, USA
Dr. F.C.M. Lau	1994 Scalable High Performance Computing Conference	Knoxville, USA
Dr. W.P. Wang	Int'l Conference on Computer Aided Geometric Design	Penang, Malaysia
<u>Name</u>	<u>Research Grant</u>	<u>Amount</u>
Dr. C. Chan	Contextual dependence modelling for speech recognition	HK\$69,660
Dr. W.H. Cheung	Development of a transport mechanism for delivering multi-media data	HK\$60,000
Dr. A.K.O. Choi	Real-time discrete event detection in audio signals	HK\$80,000
Dr. A. Farhoomand	A structural model of electronic data interchange success	HK\$50,000
Dr. F.C.M. Lau	Distributed load balancing in multicomputers	HK\$116,100
Dr. W.W. Tsang & Dr. W. Wang	Large Items of Equipment Allocation 1993-94 (Silicon Graphics Crimson VGXT Workstation)	HK\$500,000
Dr. T.H. Tse	SAD_FACT: a Structured Analysis and Design Framework using Algebraic semantics and Category Theory	HK\$46,440
Dr. W. Wang	Orientation control in computer animation and robotics	HK\$116,100

Dressed for Success

The students in the first graduating class of Information Systems Program have posed after their Year Project presentations.

Definitely among the brightest students in Hong Kong, here seen are from left to right: Ko Chi Kin (Thomas), Ma Ho Kee, Yong Chi Kwong (Patrick), Low Kwok Wai (Clarence), Lau Tat Chun, Au Shu On (Frankie), Yeung Yin Ping (Sarah), Ken Chun Lok (Kenny), Woo Oi Chi (Joelle), Lui Kim Ching (Andy), Lai Lap Ming (Elf), Wong Chi Wang (Hudson), Chan Wai Yin (Benny), Ching Wo Mok

(Wallace), Chau Kwok Wai (Brian), Fong Siu Bong.

Also in the picture are Mr. David Gardener (English Centre), Dr. Ali Farhoomand (Coordinator of the Program) and Dr. Jahangir Karimi (Lecturer in charge of the Year Projects). Students missing from the picture are Cheng Wai Ming, So Siu Ming (Sherman) and Wan Sau Ping (Louisa).

We wish all these students as well as all other Computer Science graduating students best of luck in their new and promising careers.



The Department's most recent Ph.D. graduate is Dr. Chengzhong Xu (posed here on left with his supervisor, Dr. F.C.M. Lau). Dr. Xu received his undergraduate and Masters degree from Nanjing University. He then joined Shantou University as a lecturer in computer science. In 1990, he was granted a leave to come to our Department to study full-time toward a Ph.D. degree, which was fully supported by a Li Ka Shing scholarship. He received his degree in November 1993. The title of his thesis is "Iterative methods for dynamic load balancing in multicomputers".

Based on his thesis, Dr. Xu has so far published 5 journal and 3 conference papers. Since January 1994, he has been a guest professor at the Department of Computer Science, University of Paderborn, Germany.

HKUCS news

December 1994, Vol. 2, No. 3

Published three times a year by Department of Computer Science, The University of Hong Kong, Pokfulam Rd., HK / Email csnews@csd.hku.hk

Employers' Expectations

Dr. Bethany Chan
Honorary Lecturer

(This is the full text of a speech delivered by Dr. Chan at the 1994 Graduation Dinner. See the picture on the back page. Ed.)

As some of you may know, I work in a stockbrokerage firm that is expanding rapidly. Because of this expansion I have been involved in hiring new staff, and as such, have given a lot of thought to the question "what kind of person do we want to hire?"

Recently, our company placed a recruitment advertisement in the SCMP which attracted well over 200 applicants. Our first screening of resumes was based on educational qualifications, the university from which the candidate graduated, and the number of A's the applicants had obtained in the university.

But academic accomplishments are only one aspect of a person and, ultimately, it is the personality of the person on which we want to focus in our recruitment process. It does us no good to hire a 4.0 grade point average, Harvard graduate if that person turns out to be irresponsible and needs to have his/her hand held constantly.

Hong Kong University (HKU) students still have the distinct advantage of graduating from the best university in Hong Kong. This advantage by itself, however, is no longer sufficient to secure a well-paid job with promising future. One of the complaints I've heard often about HKU graduates is that they are snobbish and don't have much loyalty. It pains me to hear this as I too have at one point taught at the University and I would like to think that my students are well thought of by the community at large. In fact, people say that hiring graduates from universities abroad is better than hiring HKU graduates. While I would love to disagree, I can see three obvious

merits in hiring students who have gone abroad to study and have come back to Hong Kong to work:

Going abroad can be a humbling experience. Staying in Hong Kong and knowing that you are one of the few accepted to HKU can bloat your ego, especially given encouragement from friends, neighbours and proud relatives. While Asian students on average do well in universities abroad, chances are that they will run into some very bright people during their studies there. This should widen the students' social and intellectual horizons.

Going abroad can make you more tolerant. You are exposed to people who are culturally different from you. As a result, you start to learn more about other people and cultures.

Going abroad can make you more independent. You can no longer rely on relatives or your parents and must accordingly mind your own affairs.

All these are characteristics sought by most employers because:

- knowing your own limitations curbs the snobbishness of youth,
- tolerance may allow you time to breed loyalty, and
- independence makes you self sufficient.

Unfortunately, the best kept secret in town appears to be that these merits need not necessarily be cultivated abroad. I hope that you can show employers out there that HKU graduates are neither snobbish nor spoiled and that they are loyal and eager to learn independently.

This issue

Profiles	2
Research	3
News	4
Grants	4
Computer Corner	5
Student Affairs	6

Profiles

Prof. T. Anthony Marsland, a Visiting Professor in our Department, received his B.Sc. from the University of Nottingham (UK) and M.Sc. and Ph.D. degrees from the University of Washington, Seattle. After working as a research scientist at the Bell Laboratories, he joined the Computing Science Department at University of Alberta, Canada, becoming a Full Professor in 1980. Since that time he has been a McCalla Research Professor, an Irskine Fellow (Canterbury), a Leibnitz Research Fellow (Paderborn), and has served as an ACM National Lecturer. Prof. Marsland's main research interest is in distributed systems design, area in which has published extensively, including a recent volume, *Global States and Time in Distributed Systems*, IEEE Press (1993), with Zhonghua Yang. At present, he is completing a 3-year term as President of the International Computer Chess Association.



Ms. Brenda Ng, our new Executive Officer, graduated from the Music Department of the University of Hong Kong. She obtained a diploma in piano teaching in 1987 and was admitted Licentiate of Trinity College of London and Royal Schools of Music (L.T.C.L. & L.R.S.M.). During her postgraduate studies, she was appointed as teaching assistant and Senior Technician at the Music Department, and Resident Tutor at Swire Hall. Brenda is currently the Senior Tutor of Lady Ho Tung Hall and the Acting Musical Director of the Eastern District Children's Choir. She has been conducting lectures on popular music in the Music Department in this semester and is also working freelance as a songwriter, pianist and score-typesetter. Among her compositions are the children's musical, *Eastern District is My Home*, theme song of World Vision of Hong Kong's *Chin Chin the World* and the school song of Cheung Chuk Shan College.



Dr. Ken Peffers was an Assistant Professor of MIS at the School of Business, Rutgers University (New Jersey) from 1991 to 1994 before joining our Department last August as a Lectures in Information Systems. He earned a Ph.D. in management information systems from Purdue University (Indiana) in 1991, where he was a General Electric Doctoral Fellow in 1988-89 and 1990-91. He participated in the Doctoral Consortium held at the 1990 ICIS in Copenhagen, Denmark and was a Society for Information Management (SIM) Doctoral Fellow in 1990. Dr. Peffers also holds a B.A. in history from New College, Sarasota, Florida. Dr. Peffers research interests include the evaluation of information technology (IT) investments, the industrial and organizational impacts of innovative IT investments, and the strategic management of information and IT. He has published in *Information Systems Research*, *Organization Science* (in press) and *Organizational Computing* (forthcoming), among others.



Dr. Lester W. Yee, a new Lecturer in Information Systems, received his B.S., M.B.A. and Ph.D. degrees from Rensselaer Polytechnic Institute in Troy, New York. His doctoral thesis is entitled *Four-Dimensional Information Visualization: Applications for Enterprise Information Management*. He has published in *Journal of Systems Integration*, *Journal of Intelligent Manufacturing* and *IEEE Transactions on Software Engineering*, as well as in proceedings of international conferences and symposiums. Dr. Yee is currently teaching Database Management Systems and Systems Analysis and Software Design courses in the IS programme. His research interests include user interface design, information visualization, virtual reality for information management, CASE tool development, repository design, and electronic commerce. Born in the United States, he hopes to learn some Chinese while at the University of Hong Kong.



Research

- W.X. Li, Y.Q. Zu and C. Chan, "A Chinese Speech Database (Putonghua Corpus)," *Proceedings of Fifth Australian International Conference on Speech Science and Technology*, Perth, December 1994.
- Q. Huo and C. Chan, "On-Line Bayes Adaptation of SCHMM Parameters for Speech Recognition," to appear in *Proceedings of International Conference on Acoustics and Speech Signal Processing*, Detroit, May 1995.
- K.P. Chan, "Learning Templates from Fuzzy Examples in Structural Pattern Recognition," accepted for publication in *IEEE Transactions on Systems, Man and Cybernetics*.
- D. Deng, K. P. Chan and Y.L. Yu, "Handwritten Chinese Character Recognition using Spatial Gabor Filters and Self-Organizing Maps," *Proceedings of 1994 IEEE International Conference on Image Processing*, Austin, U.S.A., November 1994, pp. 940-944.
- Y.T. So and K.P. Chan, "Neuro-Expert System by a Supervised-Learning Self-Organising Network," *1994 International Computer Symposium*, Hsinchu, Taiwan, December 1994.
- Y.T. So and K.P. Chan, "Supervised Learning of the Adaptive Resonance Theory System," *1994 International Symposium on Artificial Neural Networks*, Tainan, Taiwan, December 1994.
- F.Y. Chin and C.A. Wang, "On Greedy Tetrahedralization of Points in 3D," *Proceedings of Fifth International Symposium on Algorithms and Computation*, Beijing, P.R. China. (*Lecture Notes in Computer Science*, Springer-Verlag, August 1994, pp. 532-540).
- D. Kwan and F.Y. Chin, "Practical Distributed Garbage Collection for Networks with Asynchronous Clocks and Message Delay," *Proceedings of 1994 International Conference on Parallel and Distributed Systems*, Hsinchu, Taiwan, December 1994.
- F.Y. Chin and C.K. Poon, "Performance Analysis of Some Simple Heuristics for Computing Longest Common Subsequences," *Algorithmica*, 12, 1994, pp. 293-311.
- C.Z. Xu and F.C.M. Lau, "Optimal Diffusion Parameters for Load Balancing in Mesh Networks," *Parallel Processing Letters*, Vol. 4, No. 1&2, June 1994, pp. 139-147.
- C.Z. Xu and F.C.M. Lau, "Iterative Dynamic Load Balancing in Multicomputers," *Journal of the Operational Research Society*, Vol. 45, No. 7, July 1994, pp. 786-796.
- G. Chen and F.C.M. Lau, "Laying Out Midimew Networks with Constant Dilation," *Proceedings of CONPAR 94 - VAPP VI Joint International Conference*, Linz, Austria, September 1994, pp. 773-784.
- S. Cheung and F.C.M. Lau, "Routing with Locality in Partitioned-Bus Meshes," *Proceedings of 6th IEEE Symposium on Parallel and Distributed Processing*, Dallas, Texas, October 1994, pp. 715-721.
- A. Reinefeld and T.A. Marsland, "Enhanced Iterative-Deepening Search," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 16, No. 7, July 1994, pp. 701-710.
- Z. Yang and T.A. Marsland, *Global States and Time in Distributed Systems*, IEEE Press, 1994.
- K.H. Pun, "Copyright Protection for Computer Software: Does Hong Kong Meet International Standards?" *Hong Kong Law Journal*, Vol. 24, Part 1, 1994, pp. 56-88.
- K.H. Pun, "A Critique of Copyright Protection for Computer Software in the People's Republic of China," *European Intellectual Property Review*, 6, 1994, pp. 227-238.
- K.H. Pun, "The Case for Decompilation: A Response to the Law Reform Commission's Report on Copyright," *Hong Kong Law Journal* (to appear).
- K.H. Pun, "Patentability of Computer Software in China: Comments on the Chinese Patent Office Guidelines," *European Intellectual Property Review* (to appear).

Many computer scientists in academia concede that computer science curricula tend to provide poor preparation for real-world software development. Citing the notorious software glitches in the baggage-handling system for Denver's new international airport, one expert says "Basic things like designing code inspections, producing user documentation and maintaining aging software are not covered in academia." (*Scientific American* 9/94, p. 86)

News

Prof. F.Y. Chin served on the program committee of The 1994 International Conference on Parallel and Distributed Systems, Hsinchu, Taiwan, December 1994; The 1994 International Computer Symposium, Taiwan, December 1994; and The 8th International Workshop on Distributed Algorithms, September 1994.

Last summer, Dr. K.P. Chow and some other members of the Department successfully developed a prototype "108" Directory Enquiry search system for Computasia, a subsidiary of Hongkong Telecom. The aim of this system is to reduce the average response time for callers. Hongkong Telecom decided to seek further consultancy service from our Department to modify and install the keyword search part of the prototype onto their existing system. This project was completed on time by mid-November. If you have recently dialled up the 108 directory assistance and have received prompt attention, it is most likely due to the contribution of the consultancy team from our Department.

Dr. D.W.L. Cheung was recently invited to

provide consultancy service to the Hong Kong Air Terminal Services (HATS). ICL is developing an Automated Resource Control System (ARCS) for HATS which is a planning and scheduling system designed to enhance HAT's productivity and resource utilization. Dr. Cheung will provide technical auditing service to HATS at all the phases of the development to ensure that the quality and the process for development of the system are up to standard.

Dr. T.H. Tse has been elected a Fellow of the Hong Kong Institution of Engineers and appointed as a Foundation Editor of the *Journal for Universal Computer Science*, Springer-Verlag, Berlin. In August 1994, he presented a seminar on "FOOD: a Functional Object-Oriented Design methodology" at SRI in Stanford University. Dr. Tse also attended the 18th IEEE Annual International Computer Systems and Applications Conference held in November 1994 as a Programme Committee Member and chaired a session on Formal Methods.

The Software Engineering Group is pleased to announce the appointment of Dr. H. Yan from the University of Oxford as a Post-Doctoral Fellow.

Grants

Dr. K.P. Chan was recently awarded a grant by Croucher Foundation for a project entitled "A Chinese Document Processing System" (\$399,000).

Dr. K.G. Peffers was awarded a grant by HKU's Research and Conference Grant Committee for a project entitled "Rewards to investors in innovative technology" (\$102,080).

Dr. T.H. Tse was awarded a grant by the Research Grants Council for a project entitled "COD: a Communicating Objects Design model" (\$755,000).

Mr. Chen Guihai (Ph.D. student) was awarded a Robert Black College Scholarship to subsidize his residence until Dec 31, 1995.

The following lecturers were recently awarded conference grants.

<i>Name</i>	<i>Conference</i>	<i>Place & Date</i>
Dr. C. Chan	Int. Conf. on Acoustics & Speech Signal Processing	Detroit, U.S.A. May 8-12, 95
Dr. W.H. Cheung	1994 Int. Computer Symposium	Hsinchu, Taiwan Dec 12 - 15, 94
Dr. A. Farhoomand	European Conf. on IS	Athens, Greece June 1 - 3, 95
Dr. T.W. Lam	Int. Conf. on Algorithms & Architectures for Parallel Processing	Brisbane, Australia April 19 - 21, 95
Dr. T.H. Tse	Workshop on Industrial-Strength Formal Specification Techniques	Boca Raton, U.S.A. April 5 - 8, 95

Computer Corner

Mr. William K.P. Chan
Computer Officer

At present, the seven-member technical staff manages a network of about 120 UNIX workstations and servers, and 80 486 PCs. This year we have acquired several powerful systems, including three Sun SPARCserver 20, six IBM RS/6000 PowerPCs and an SGI Crimson RealityEngine deskside graphics workstation. The total number of workstations and PCs is expected to increase to some 300 next year when we move to our new premises in the Phase V building.

Last year our departmental FDDI ring backbone was put into service with the student file/compute server, *dragon*, on the ring. By delivering a throughput of 100 Mbps, the FDDI ring provides high speed data transport between the server and all the client workstations. This year the staff server, *stamina*, which provides fast access to file systems and network, was also attached to the ring. In addition, two Asynchronous Transfer Mode (ATM) switches together with a few high performance workstations with ATM interfaces have been installed recently. All these equipment will be connected to a high speed 155 Mbps SONET OC-3c circuit which links up HKU, Chinese University

and University of Science and Technology.

As you know, our computing laboratories are among the most crowded in the university. The average floor area space for a machine and its accessories including the space for the user is about 1.5 sq. m. Next year the laboratory space will be doubled and more machines will be put into service after we move to the new building. Unfortunately, the laboratories will be geographically dispersed, which may create inconvenience in administration and use. We intend to install access card systems in all new laboratories for enhanced security. In addition, more dialup lines will be put into service in order to provide a more convenient way for accessing the department's computing facilities.

In the last few years, the members of the technical staff have tried hard to bring our computing services up to the commercial standards by keeping the machine downtime to minimal. However, our efforts have been somewhat thwarted by technical difficulties such as the instability of the UNIX operating system. Despite these difficulties, we will continue our efforts to provide high quality services in the years to come.

Did you know that

Figures from the American Forest and Paper Association indicate that the tonnage, since 1983, of annual shipments of US office paper, has gone up 51%. (*Fortune* 7/11/94 p.62)

Researchers at IBM have outdone themselves, exceeding their own goals for giant magnetoresistance (GMR) technology. Commercial versions of GMR heads will sense 10 billion magnetic dots per square inch, resulting in thumbtack-size computer disk drives with 100-megabyte capacities by the end of the decade. (*Business Week* 7/11/94 p.145)

IBM, AT&T, Motorola and Loral are joining forces to develop next-generation computer chip technology, using X-rays rather than ultraviolet light to create semiconductors far more powerful than today's products. Because X-ray technology produces chips with electronic circuits half the width of those currently available, more circuits can be packed onto each chip, increasing the storage capacity of memory chips to one billion bits of data, or 60 times what today's chips can manage. (*Wall Street Journal* 7/27/94 A3)

First quarter sales figures from the Software Publishers Association indicate that compared to first quarter a year ago sales of programs written for Windows are up 43%, for DOS down by 32, for Macintosh up 17%. Overall, the biggest jump in a program category was home education software, up 127%; next was entertainment software, up 57%. (*Atlanta Journal-Constitution* 8/18/94 E2)

(The items in this column are compiled from the electronic bulletin, Infosys. Ed.)

Student Affairs



Happy faces at the Graduation Dinner, which was held at the Charter House Hotel on September 24, 1994.



The 4C Night was held on Dec. 4, 1994 at the YMCA, TST. This year's championship was shared by the Year 2 and Year 3 teams. The first runner-up was the Staff team, followed by the sleepy Year 1 who attributed their so-so performance to too much homework!

We welcome your comments, suggestions and articles. Please send your submissions by mail or via csnews@csd.hku.hk to Editor, HKUCS News.

hkucs news

PUBLISHED BY DEPARTMENT OF COMPUTER SCIENCE, THE UNIVERSITY OF HONG KONG

JANUARY 1996

**WANTED:
PROGRAMMERS,
BUT MORE**
DR. K. PEFFERS

One of the department's greatest assets may be its relationship to employers. Recently, the department was host to executives from a variety of industrial sectors as it held its second **Computer Science Advisory Board** meeting on July 21, 1995

Dr. Ali Farhoomand addressed the board with the results of a survey of employer expectations and opinions about HKU computer science graduates. In the survey, 85 employers rated the importance of personality traits, language skills, technical and managerial skills, and general knowledge of business and management.

All of the personality traits were rated as very important, on average. Among language skills, communications in Cantonese and English were rated as most important. Of technical and managerial skills, just a few were rated as very important: communication with users and management, ability to elicit information for systems analysis, and application program-

mingly important. There is a pressing need for students who can better understand and communicate with managers about business needs. Students need a wide knowledge and interest in business, Hong Kong and the world. This is more important than to have additional technical competencies because, according to Mr. Y. B. Yeung, "we will have to spend the first six months to retrain them in the specific technical skills anyway." Dr. Y.S. Cheung, Dean of the Faculty of Engineering, agreed that the department's students were required to take too many computer science courses, preventing them from being able to develop other interests.

The employers' views remind us to encourage students to take a broad view of their education here at HKU. Specific technical skills may be obsolete tomorrow, but communication skills and an interest in business and the world at large will help graduates to be flexible enough to make those career adjustments nec-

This Issue

Editorial	1
Profiles	2
Prizes	2
Research	3
Publications	3
Awards	4
Research	5
Grants	5
CS Festival	5
Conference	6
Grants	6
News	7
More News	8

Computer Science Advisory Board Meeting

Mr. K.K. Yeung	Deputy Managing Director	Hong Kong Air Cargo Terminals
Mr. Ian Riddell	General Manager of MIS	Cathay Pacific Airways, Limited
Mr. Raymond Chu	Gen. Mgr., Technical & Software Services	ComputAsia Limited
Mr. Stephen Mak	Acting Director	IT Services Department
Mr. Y.B. Yeung	Senior Manager, T.S.V. Development	HongKong Bank
Mr. Eric Wong	Senior Manager	Anderson Consulting
Mr. Robert Neely	Research & Planning controller	Royal Hong Kong Jockey Club
Mr. Kenny Lau	Audit & Management Services Manager	M T R
Mr. Roy Lee	Senior Systems Consultant	ICO Limited

ming. Application programming was the only computer science technical skill rated by the respondents as being very important.

The executives amplified the issues raised by the survey. They value the ability to work with coworkers and clients, a wide range of interests, and loyalty to the organization and the profession. They said that language skills in English, Cantonese and Mandarin are increas-

essary for lifetime professional success. We are all very thankful for the time, effort, and the sound advice of our employer advisors. I am sure that we all echo Prof. Chin's thanks and the Dean's promise that their advice will be taken seriously and acted upon.

PROFILES

Dr. Benjamin C.M. Kao [Lecturer] received the B.Sc. degree in computer science from the University of Hong Kong in 1989, M.S. and Ph.D. degrees in computer science from Princeton University in 1991 and 1995, respectively.



From 1989-1991, he was a teaching and research assistant at Princeton University. From 1992-1995, he was a research fellow of the computer science department at Stanford University. His research interests include database management, distributed algorithms, real-time systems, and information retrieval systems.

Dr. Cho-Li Wang [Lecturer] received his B.S. degree in Computer Science and Information Engineering from National Taiwan University in 1985. He obtained his M.S. and Ph.D. degrees in Computer Engineering from University of Southern California in 1990 and 1995, respectively. He joined our Department in September 1995. He is currently teaching principles of operating systems and fundamental of parallel computing. His interests of research include parallel architectures and algorithms, distributed and heterogeneous computing, image understanding, and multimedia applications.



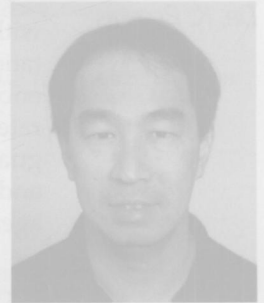
Dr. Charles X. Ling [Lecturer] obtained a B.Sc. in Computer Science from Shanghai Jiao Tong University in China in 1985, and Ph.D. in Computer and Information Science



凌晓峰

from University of Pennsylvania in 1989. From 1989-1995, he was an assistant professor at the University of Western Ontario. He has done extensive research in computational modeling of several landmark cognitive learning tasks. He has also worked in many areas of machine learning, including Inductive Logic Programming (ILP), learning to control dynamic systems, knowledge-base refinement, nearest neighbor algorithms, and artificial neural networks. Most of his publications can be accessed from his WWW home page: <http://www.cs.hku.hk/~ling>. He was in the program committee of CSCSI Machine Learning Workshop, International Workshop on Inductive Logic Programming, and Program Co-chair of International Conference of Young Computer Scientists.

Dr. John Yee [Visiting lecturer] had seventeen years experience with IBM. Dr. Yee moved to U.S. as a teenager, where he earned a MBA. He joined IBM development after he received his Ph.D. in Fault Tolerance Computing at Utah



State University. On the IBM faculty loan program Dr. Yee taught at New Mexico State University and the National University of Singapore. After eleven years at IBM U.S., he transferred to IBM/Hong Kong. In Hong Kong, John has been the IS consultant to help develop applications for both the airline and banking industry. John has spent two years as an assignee working for IBM/China in Beijing.

Mr. Lee Sau Dan (CSIII) was awarded the Hong Kong University Alumni Prize for 1994-95 and was awarded the Chan Kai Ming Prize of \$350 in Engineering for 1994-95.

PRIZES

Mr. Yeung Kwok Ho (CSI) was awarded the Ho Fook Prize in Engineering of \$350 for 1994-95.

Mr. Wong Ming Yuen (CSI) was awarded the Walter Brown Memorial Prize of \$1,000 in Mathematics for 1994-95.

- Burn, J. and A.F. Farhoomand** "Electronic commerce and EDI in Asia," forthcoming in *The Fire of the Dragon: The Role of Information Technology in Hong Kong*, Burn J. and M. Martinsons (eds).
- Chan, K.P.** "Learning Templates from Fuzzy Examples in Structural Pattern Recognition", forthcoming in *IEEE Trans. on Systems, Man & Cybernetics*.
- Chen, G. and F.C.M. Lau** "Shuffle-Ring: Overcoming the Increasing Degree of Hypercube." forthcoming in *Proceedings of 2nd International Symposium on High-Performance Computer Architecture (HPCA-2)*. San Jose, USA, February 1996.
- Chen, L., T.Q. Nguyen & K.P. Chan**, "Symmetric Extension Methods for Parallel M-Channel Perfect Reconstruction Linear Phase FIR Analysis/Synthesis Systems", forthcoming in *IEEE Trans. on Signal Processing*.
- Cheung, D.W., J. Han, V. Ng and C.Y. Wong**, "Maintenance of Discovered Association Rules in Large Databases: An Incremental Updating Techniques". *Proc. 12th IEEE International Conference on Data Engineering*, New Orleans, Louisiana, U.S.A. (Mar. 1996).
- Cheung, D.W. and J. Han**, "Maintenance of Discovered Knowledge : A Strategy for Updating Association Rules", *Proc. 1st International DOOD Workshop on Integration of Knowledge Discovery with Deductive and Object-Oriented Databases (KDOOD-95)*, Singapore (Dec. 1995).
- Cheung, S. and F.C.M. Lau**, "Routing with Locality on Meshes with Buses", forthcoming in *Journal of Parallel and Distributed Computing*.
- Cho, J., C. Hsu, L. Yee and L. Rattner**, "Core Information Model: A Practical Solution to Costly Integration Problems," *Computer and Industrial Engineering*, Vol. 28, No. 3, 1995.
- Dos Santos, B.L. and K. Peffers**, "Performance Effects of Innovative IT Applications over Time," forthcoming in 1996, *IEEE Transactions on Engineering Management*.
- Dos Santos, B.L. and K. Peffers**, "Rewards to Investors in Innovative Information Technology Applications: First Movers and Early Followers in ATMs," *Organization Science (INFORMS)*, May-June 1995, 6:3, 241-259.
- Dos Santos, B.L. and K. Peffers**, "Competitor and Vendor Influence on the Adoption of Automated Teller Machines," Research in Progress, *Association for Information Systems (AIS) Inaugural Conference*, Pittsburgh PA USA, August 1995.
- Etezadi, J. and A.F. Farhoomand** "A structural model of end user computing satisfaction and user performance," forthcoming in *Information & Management*.
- Farhoomand, A.F.** "The applications of information technology in Hong Kong's service industries," Report prepared for *Asian Productivity Organization* (July 1995).
- Farhoomand, A.F. and D. Drury** "Factors influencing the success of electronic data interchange," *DataBase: The ACM Journal of SIGMIS* (November 1995).
- Farhoomand, A.F. and U. Pace** "An exploratory investigation of electronic commerce use in international trade," *Proc. 3rd European Conference on Information Systems*, Athens, Greece (June 1995).
- Farhoomand, A.F. and D. Tulloch**, "The effect of electronic data interchange on the firm's operations," *TIMS 33rd International Meeting*, Singapore, (June 1995).
- Hsu, C. and L. Yee**, "Four-Dimensional Information Visualization," *1995 ACME International Conference*, Minneapolis, MN, August 1995.
- Jin, L.W., K.P. Chan & B.Z. Xu**, "Off-line Chinese Handwriting Recognition using Multistage Neural Network Architecture", accepted for presentation in *1995 IEEE Int. Conf. on Neural Networks*, Perth, Australia, Dec. 1995.
- Jin, L.W., K.P. Chan & B.Z. Xu**, "A Deformable Elastic Matching Model for Handwritten Chinese Character Writing", *IEEE Int. Conf. on Systems, Man and Cybernetics*, Vancouver, Canada, Oct., 1995.
- Jin, L.W., K.P. Chan and B.Z. Xu**, "Consistent Relaxation Matching for Handwritten Chinese Character Recognition", *Fifth IEE Int. Conf. on Image Processing and its Application*, Edinburgh, U.K., July, 1995.
- Kao, C.M.**, "An Overview of Real-Time Database Systems", in *Advances in Real-Time Systems*. Prentice Hall (1995).
- Kao, C.M.**, "Applying Updates in a Soft Real-Time Database System", *Proc. of the 1995 ACM International Conference on Management of Data*. (1995).
- Kao, C.M.**, "On Building Distributed Soft Real-Time Systems", *Proc. of the 4th Workshop on Parallel and Distributed Real-Time Systems* (1995).
- Kao, C.M.**, "Database Support for Efficiently Maintaining Derived Data", forthcoming in *Proc. of The Fifth International Conference on Extending Database Technology*, France (1996).
- Ng, V., D.W. Cheung and A.W. Fu**, "Adaptive Color Histogram Indexing", *Proc. SPIE International Symposium on Voice, Video, and Data Communication*, SPIE Proc. V.2606-20, Philadelphia, PA U.S.A. (Oct. 1995).

- Ng, V., D.W. Cheung and A.W. Fu, "Medical Image Retrieval by Color Content", *Proc. 1995 IEEE International Conference On System, Man and Cybernetics*, Vancouver, CA (Oct. 1995).
- Pun, K.H. "Anti-unfair competition law in China: still awaiting supplements", forthcoming in *International Review of Industrial Property and Copyright Law*.
- Pun, K.H. *Software and Copyright* (in Chinese), Joint Publishing: HK, forthcoming.
- Szu, H., S. Zhong, et al., "Multi-resolution wavelet techniques for noisy inverse sensing problem", *SPIE Vol. 2491*, pp.481-489, Orlando, FL USA, April 1995.
- Tse, T.H., F.T. Chan, and H.Y. Chen, "An axiom-based test case selection strategy for object-oriented programs", in *Software Quality and Productivity: Theory, Practice, Education, and Training*, M. Lee, B.-Z. Barta, and P. Juliff (eds.), Chapman and Hall: London, pp. 107-114 (1995).
- Whitman, J., A.F. Farhoomand and B. Tricker "Hong Kong firms view of information technology," Part of a joint multinational study conducted by teams from Boston University, MIT, Nanyang Technological University, University of Melbourne and The University of Hong Kong (1995).
- Xu, C.Z. and F.C.M. Lau, "Efficient distributed termination detection for synchronous computations in multicomputers", forthcoming in *IEEE Transactions on Parallel and Distributed Systems*.
- Xu, C.Z., B. Monien, R. Luling, and F.C.M. Lau, "Nearest neighbor algorithms for load balancing in parallel computers", *Concurrency: Practice and Experience*. Vol. 7, No. 7, October 1995, 707-736.
- Yee, L. and C. Hsu, "Visual Information Universe" in *Enterprise Integration and Modeling: the Metadatabase Approach*, Kluwer Academic Publisher, Norwell, MA, 1996.
- Zhong, S. and F. Chin, "Hierarchical block motion estimation based on visual patterns for video coding", forthcoming in *Proc. ICASSP'96*, Atlanta, Georgia, May 1996.
- Zhong, S. and F. Chin, "Visual pattern-based motion estimation for video coding", forthcoming in *SPIE*, vol. 2668, *Proc. IS&T/SPIE Symposium on Electronic Imaging: Science and Technology, Digital Video Compression: Algorithms and Technologies 1996*, San Jose, California, Feb. 1996.
- Zhong, S., F. Chin, and Q.Y. Shi, "Hierarchical coding in image compression: new results" *Optical Engineering*, Vol. 34, no.10, Oct. 1995.
- Zhong, S., F. Chin, et al., "Image/video compression technique and its applications", (invited paper) *Journal of Electronics* (Chinese Edition), Nov. 1995.
- Zhong, S., H. Szu, F. Chin, et al., "Wavelet aided vision technique and its applications: using assembly line inspections as an example", to appear *Proc. ICONIP'95*, Beijing, China, Oct. 1995.
- Zhong, S. and F. Chin, "Improved and optimal adaptive hierarchical vector quantization for image coding and indexing", *Proc. the First International Workshop on Multi-Media Database Management Systems IW-MMDBMS'95*, Blue Mountain Lake, NY, USA, August 1995.
- Zhong, S., H. Szu, F. Chin, et al., "Wavelet-aided assembly line inspections", *Proc. of WCNN'95*, Washington D.C., July 1995.
- Zhong, S., Q.Y. Shi, and M.T. Cheng, "Multi-scale stereo vision based on wavelet transform", (in Chinese) *J. of Software*, vol.6, no.2, Feb. 1995.
- Zhong, S., Q.Y. Shi, and M.T. Cheng, "Adaptive hierarchical vector quantization for image coding", *Pattern Recognition Letters*, Vol.15, No.12, December 1994.

AWARDS

Professor F.Y.L. Chin, Head of this Department, has recently been awarded Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in recognition of his contributions in the field of computing. This is a high honour given to selected individuals all around the world.

Bernard Tsang Chi-Chung and **Catherine Wong Wing-Man**, CS graduates of 1995, received first prize in the 1st IEEE Computer Society Hong Kong Chapter Software Project Competition. Their winning project is entitled "Multimedia Chinese Character Database" which was supervised by Dr. K.H. Pun.

Congratulations!

RESEARCH GRANTS

Name:	Project title:	Total budget approved (HK\$):
Dr. C. Chan	Recognition of hand written Chinese characters by contextual vector quantization	62,865
Dr. K.P. Chan	Machine learning of fuzzy-attribute graph representation	160,000
Dr. D.W.L. Cheung	New induction techniques for knowledge discovery in databases	541,000
Dr. D.W.L. Cheung	Rule-based attribute-oriented induction: a new technique for knowledge discovery in database	108,000
Dr. W.H. Cheung	Development of a transport mechanism for delivering multi-media data	50,000
Dr. T.W. Lam	Approximation algorithms for biconnectivity	160,000
Dr. F.C.M. Lau	Distributed load balancing in multicomputers	160,000
Dr. T.H. Tse	Functional object-oriented design (FOOD)	135,000
Dr. T.H. Tse	In Black and White: an integrated approach to object-oriented testing	492,000
Dr. W. Wang	Geometric modeling using virtual reality	160,000
Dr. L. Yee (with W. Cheung)	Multimedia-Based Learning System for Database Modeling and Design	112,000

CS FESTIVAL BASKETBALL COMPETITION

DR. L. YEE

From the crispness of the cool air at 8:30 Pokfulam Park that Saturday morning of November 25th, our destiny was at hand. This was the 1995 CS Festival basketball finals. As each member arrived, the synergy of the CS Staff/Postgrad Team was forming. At 9:05, it was showdown, as the tip-off for the game gave possession to the CS Staff. From that point on, there was no letting up from the staff team. Their opponents proved formidable at times making strong offensive and defensive moves, but the staff team took it to the challenge as an all-around team in neutralizing offense and breaking through defense of the opponents. By halftime it was just a matter of time before victory fell before the staff team. The victory was decisive, 52 to 33. It was a momentous day as this represented the first time in recollection that the CS Staff had won the basketball tournament. It was a hard-earned victory as they played the most games, climbing the tournament pairings tree proving to Year 1, Year 2 and

finally Year 3 that they were up to the task. Vaguely forgotten are images from the previous year's grilling defeat to what was then the Year 1 team - redemption was this year.



[ABOVE] Year 3 team members (L to R): Tayman Kan, Samuel Lee, Amelia Yeung, Henry Kwok, Long Wong, and Daniel Lo. Not shown: Choi Yi King, Ip Yun Chun, Chan Fai, Leung Kwong Hoi, Yu Chi Wang, and Cheng Chi Keung.



[LEFT] Staff team members (L to R): Kelvin Chung, Charles Cheng, Zhong Sheng, Richard Ma, Ali Farhoomand, Cho-Li Wang, Wenping Wang, David Choy, and Lester Yee (Captain). Not shown: Gui Hai Chen.

The *staff* were the overall CS Festival Champions for 1995, followed by year 2 and year 3, tied as runners-up, and year 1. Thanks go to Welly Wong and Carl Yang, co-coordinators, and all who participated in CS Festival 1995.

**CONFERENCE
GRANTS**

<i>Name:</i>	<i>Title of Conference:</i>	<i>Place of Conference:</i>	<i>Dates (1995):</i>
Tse Siu Hong, Savio	SIROCCO'95 International Colloquium of Structural Information and Communication Complexity	Patras, Greece	Jun 12-14
Mr. Yiu Siu Ming	The Seventh Canadian Conference on Computational Geometry	Quebec, Canada	Aug 6-10
Mr. Chan Wing Kwong	The Nineteenth Annual International Computer Software and Applications Conference	Dallas, USA	Aug 7-11
Prof F.Y.L. Chin	ICDAR '95 Third International Conference on Document Analysis and Recognition	Montreal, Canada	Aug 14-16
Mr. Sun Yue Man	Pacific Graphics 1995	Seoul, Korea	Aug 21-24
Miss Choi Ying	First Annual International Computing and Combinatorics Conference	Xi'an, China	Aug 24-26
Dr. K.G. Peffers	Association for Information Systems Inaugural Americas Conference	Pittsburgh, USA	Aug 27-29
Dr. A.K.O. Choi	International Computer Music Conference 1995	Banff, Canada	Sep 3-7
Mr. Law Hin Cheung Hubert	4th European Conference on Speech Communication and Technology	Madrid, Spain	Sep 18-21
Mr. Chee Ping Chong	IEEE Signal Processing Society 1995 International Conference on Image Processing	Washington, USA	Oct 22-25
Mr. Leung Sau Lai	IEEE Signal Processing Society 1995 International Conference on Image Processing	Washington, USA	Oct 22-25
Dr. K.P. Chan	1995 IEEE International Conference on Systems Man and Cybernetics	Vancouver, Canada	Oct 22-25
Dr. D.W.L. Cheung	Syposium on Information, Communications and Computer Technology, Applications and Systems (SPIE'95)	Philadelphia, USA	Oct 22-26
Dr. H.W. Chan	7th European Simulation Symposium	Nuremberg, Germany	Oct 26-28

KEEP IN TOUCH!

Visit our Department's homepage:

<http://www.cs.hku.hk>

In April, **Dr. Chorkin Chan** and **Dr. David Cheung** visited both the Tsinghua University in Beijing and the JiaoTong University in Shanghai as members of a delegation from the Engineering Faculty of the University. Besides visiting the research laboratories, Dr. Chan and Dr. Cheung have given several research seminars there and had fruitful exchanges with many students and teaching staff in the two universities.

The Software Engineering Group is pleased to announce the appoint of **Dr T.Y. Chen** of the University of Melbourne as a Visiting Senior Lecturer for 2.5 years from November 1995, and the appointment of **Professor H.Y. Chen** of Jinan University as a Research Associate for 2 years from December 1995.

In September, **Dr. David Cheung** was invited to become a member of the Industrial Advisory Panel of the Software Technology Facilities Centre (STFC) of the Hong Kong Polytechnic University. The panel member is to offer industrial insight into the Software Factory program of the Centre supported by a grant from the Hong Kong Government.

In November, **Dr. David Cheung** was invited to become a member of the Technology Panel on Software and Systems by the Hong Kong Industrial Technology Centre Corporation (HKITCC). The major functions of the panel is to guide the Corporation's strategy for technology development and to provide HKITCC with recommendations and consultancy services.

Dr. David Cheung was invited to give a talk on Software Quality Assurance in the Symposium.

Two of our theory students, **K.H. Lee** and **W.H. Wong**, have just attended a conference in Italy. They have presented their research results in the conference.

Dr. Charles Ling will be co-chairing an AAI-96 Workshop on Computational Cognitive Modeling During AAI'96, August 4-8, 1996, in Portland, Oregon.

Since 1 January 1995, **Dr. K.H. Pun** has been an international news correspondent for a new journal entitled "Computer and Telecommunications Law Review" published by Sweet & Maxwell.

Dr. Tse was recognized as the pioneer in the research on methods integration by the organizing committee members of the 1st IEEE Workshop on Industrial-strength Formal Specification Techniques (WIFT '95) held in Boca Raton, Florida in April 1995.

Dr. Tse attended the meeting of the IFIP Working Group on Algorithmic Languages and Calculi held on 9-13 January 1995 and presented a paper entitled "A tale of two cultures: towards a bridge between software mathematicians and software craftsmen".

Dr. Tse has been appointed an Associate Research Fellow of Brunel University, London from 1994 to 1995.

Dr. Tse has been invited to serve on the programme committee of the following international conferences

- 19th IEEE Annual International Computer Software and Applications Conference (COMPSAC '95) held in Dallas, Texas in August 1995.
- 20th IEEE Annual International Computer Software and Applications Conference (COMPSAC '96) to be held in Soeul in August 1996.
- Methods Integration Workshop to be held in Leeds in March 1996.

Dr. Tse has been re-appointed by H.E. the Governor as an Adjudicator of the Immigration Tribunal for two years from 1 March 1995.

Dr. Tse has been re-appointed by H.E. the Governor as a Member of the Committee on Information Technology Training of the Vocational Training Council for two years from 1 March 1995.

Dr. Tse has been elected as an Honorary Treasurer of the Hong Kong PHAB Association for 1995.



HKU Open Day, 4 November 1995

THE 108 TELEPHONE DIRECTORY ENQUIRY SYSTEM

Recently, our department has signed a multi-million dollar project with HP to implement the 108 telephone directory enquiry system for HK Telecom through its subsidiary, Computasia. The project team is led by **Dr. K.P. Chow** and **Dr. David Cheung**. Our computer officers Mr. Daniel Hung, Mr. Marcus Lee and postgraduate students K.H. Lee and Thomas Lee are key members of the team. Prof. Francis Chin, Dr. W.W. Tsang, and Dr. T.W. Lam have given their support to this very demanding projects in various aspects. HP have also assigned several experienced programmers to work in our department for the project. A team of CS students led by Mr. Yap Chi Lap was involved in the testing work as well.

In the summer of 1994, our department has completed within 5 weeks a prototype system which aimed at developing a fast search algorithm for the telephone directory enquiry service and achieved the benchmark result of 0.8 second average response time for 150 simultaneous users. In view of the success, HK Telecom management immediately used our prototype as an interim solution to relieve the existing loading of the enquiry service. The current project will enhance the prototype system by including other features, such as recovery, enhanced enquiries, yellow page search and billing functions. This project is divided into two phases: phase 1 should be finished by the end of this year, while the whole project by May 1996.

HKSPIN

The Software Engineering Institute (SEI) of CMU in Pittsburgh is a leading research organization in Software Engineer. Department of Defense (DoD) of the United States Government is a major sponsor of SEI. In order to promote and support the Software Maturity Movement, SEI has been sponsoring special interest groups in many software development centers around the world. All these groups are organized under the similar format of *Software Process Improvement Network (SPIN)*.

Hong Kong SPIN was established at the end of 1994 by a group of professionals from local industry and academy.

Dr. David Cheung was invited to become a founding committee member of the HKSPIN. In March, HKSPIN organized a two day symposium on Software Quality, attended by over one hundred local IT professionals.

SOFTWARE QUALITY ASSURANCE TRAINING IN KCRc

In October, the Heavy Rail Division of Kowloon and Canton Railway Corporation (KCRc) invited **Dr. David Cheung** to design and teach an intensive course on Software Quality Assurance for their engineers. The Heavy Rail Division is commissioning several multi-billion dollars projects in the next few years. Automatic Train Protection (ATP) is one of their critical projects in which all the controls are delivered and monitored by embedded

software. In order to develop a quality assurance program to monitor their vendors located globally in many different countries, the management of KCRc has been very forward looking in equipping their engineers with software development and software quality training. The course delivered by Dr. Cheung was well received and attended by all engineers and managers in the division.





Special Issue for OPEN DAY FOR JUPAS APPLICANTS October 19, 1996

WELCOME

ADDRESS

Prof C. Chan
Acting Head

Dear Students,

Welcome to the Department of Computer Science, The University of Hong Kong. On this Open Day for the JUPAS applicants, you will be shown many of our facilities and you will witness much of our academic activities. I wish you an enjoyable trip and look forward to seeing you studying in our department in the near future.

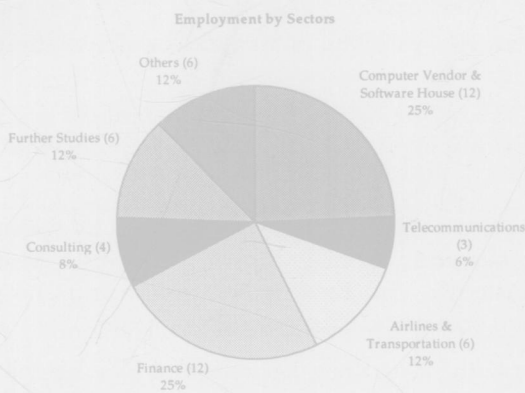
Chorkin CHAN
Acting Head

"... Apart from working on the assignments, there are many social activities, including those held by the department. One of them is the Social Mixer. Through the function, you will know more about your classmates, tutors and lecturers. In my opinion, the tutors and the lecturers are very nice and responsible. Thus, I like the department and enjoy the environment."

C.K. Lau (Kitson), Graduate of CS, 1996

EMPLOYMENT SURVEY OF GRADUATES

The Employment Survey of Computer Science and Information Systems 96' Graduates was conducted in October 1996 with 83.6% (51 out of 61) of graduates responded.



This Issue

Welcome	1
Employment Survey	1
Student Comments	1-2
Research Highlights	2
Homepage	2
Real Applications	2
New Developments	2

Note:

- 10 graduates joined one of the major computer vendors, IBM.
- Over 20% of graduates joined major local companies such as Hongkong Bank, Cathay Pacific Airways and Hongkong Telecom.
- Some graduates have received more than 3 offers.
- 2 graduates earned over HK\$25,000 per month.

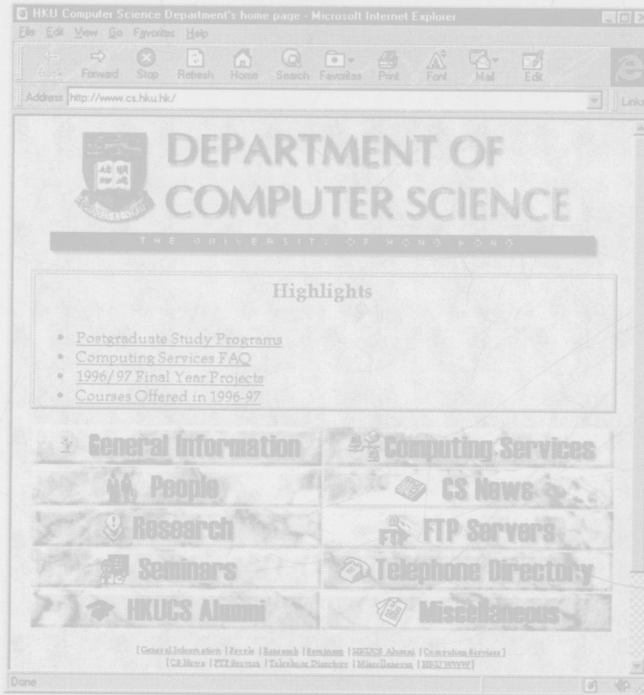
"To become a HKU CS student was my dream in F.7. As we all know, HKU is the most reputable tertiary institute in HK and CS is one of the most prestigious programmes at HKU. Even through CS is my subject of choice, it is very demanding because you need to compete with many brilliant students ..."

Y.C. Ip, Graduate of CS, 1996

HOMEPAGE

For more information about our department, please visit our homepage:

<http://www.cs.hku.hk/>



"...The most special feature of our department when compared with those in other universities in Hong Kong is its smaller size. As a result, the environment of our department is so warm that it feels like a family. Students within the department know each other well. We eat, play and hurry for projects together. Also, our relationship with the lecturers is very good. Humour and laughter is always part of lessons. Studying in such an atmosphere definitely makes school-life very enjoyable.... Perhaps the most attractive thing for you to join us is that all the students in our department are working together towards the objective of being the best. You will definitely be proud to be one of us."

Janette Chung Wui Kuen
External VC 1994-95
Student Organization of
CS Department, HKU

RESEARCH HIGHLIGHTS

In the year 1995-96, the Department has obtained over HK\$3.5 million research grants from the Research Grants Council and the University of Hong Kong. Following are some highlights:

Speech Lab has obtained over HK\$0.5 million grant and has provided consulting services to Hong Kong Telecom to develop the next generation directory enquiry system. Visit Speech Lab at room 411 to see a demonstration on the Voice Dialling System. Also demonstrated is a hand-written Chinese character recognizer.

Network Lab has obtained about HK\$1 million grant and a demonstration on Radio on Internet is available at room 413.

Graphics Lab houses over HK\$2.4 million worth graphics equipment and is supported by over HK\$ 1 million grant. Visit Graphics Lab at room 415 to explore what Virtual Reality is all about.

REAL APPLICATIONS

Pattern Recognition Lab has a grant of HK\$4.4 million supported by the Industry Department of the Hong Kong Government to develop a "Printed Chinese Document Recognition and Translation System". Visit Pattern Recognition and Computer Vision Lab at room 412 to see a demonstration on Optical Character Recognition.

The Department has a contract with Hong Kong Telecom and Hewlett Packard (Hong Kong) Ltd to develop the next generation 1083 directory enquiry system. Dial 1083 and have a direct encounter with our newly developed system.

The Department also has a contract with Hong Kong Airport Services to perform a simulation study for the ground services operations at the new Chek Lap Kok Airport. Have a look at the ground services when you visit the new Airport in the near future.

"... The Information Systems Programme was a newly established programme when I enrolled as a student in the University. Compared with the Computer Science Programme, it is less theoretical and places more emphasis on analytical work and management studies"

Cheng Wai Ming, Graduate of IS, 1994

NEW DEVELOPMENT

New courses in the areas of Multimedia, Internet Programming and Computer Vision and Recognition of Patterns and Speech are offered from this academic year. Moreover, development of new courses such as Electronic Commerce and Electronic Data Interchange (EDI) is now underway.



MESSAGE FROM THE HEAD

Prof. F.Y.L. Chin

Congratulations to Professor Francis Y.L. Chin for his reappointment by the Vice-Chancellor as the Head of the Department of Computer Science for the period from January 1997 to December 1999.



Dear Colleagues and Students,

I have been heading this Department for the past 10 years starting back in the times when it was known as the Centre of Computer Studies. Now I have been appointed by the VC to head the Department for another term. We have made a number of changes in our Department during the past 10 years and our Department has expanded from a staff number of 7 to 22-23. Many of us have devoted a lot of our time and effort to take our Department into this stage.

The overall philosophy I have held in running the Department has been, of course, to stress quality teaching and research. As a student and an academic teaching in various departments in North America and in Hong Kong in the last 20 years, I understand the value of having a good environment in which staff and student alike can flourish. Our Department will maintain its good environment to allow staff to contribute to the fullest and students to get the most out of their university years.

Since the University and Department exist to service the community, we must not lose sight of needs of the community. This may make the Hong Kong situation different from other universities in the world. In the next 3 years, I plan to get your support to bring our Department into a new height, to strengthen our relation with local industries, to enhance and fully integrate our IS program into our CS curriculum, to promote academic and applied research in our department, and to improve our undergraduate teaching and curriculum (in particular the programming skill of our students). These are all difficult tasks to achieve, especially under the university's budget trimming-down policy. I am confident that, with your full support and continued cooperation, our Department shall be on the right track to flourish.

I sincerely hope that our Department can sustain the momentum it has built up through the last few years in the challenging period ahead.

Regards.

Professor Francis Chin
Chair and Head of Computer Science

This Issue

Message from	1
The Head	
Expansion	1
External	2
Examiners	
Examinations	2
Can be Fun, Too	
Profiles	3
Research	4-5
Publications	
Prizes and	5
Awards	
Research	6
Grants	
Industrial	7
Support Projects	
School Begin	8
BBQ	
Conference	9
Grants	
TGIF/pts	10
CS Festival	10
Employment	11
Survey 1996	
Alumni	11
Matters	
News	12

EXPANSION OF OUR TERRITORY

Dr. Wenping
Wang

Our Department has acquired four new teaching laboratories in Haking Wong Building, with a total area of 479 square meters. They are the Project Laboratory, Information Systems Teaching Laboratory, General Computing Laboratory, and Software Engineering and Multimedia Teaching Laboratory. Meanwhile, over a dozen rooms for the demonstrators of the Department are currently under renovation in Haking Wong Building and will be put in use in January 1997. These offices will greatly alleviate the shortage of office space in the Department.

**EXTERNAL
EXAMINERS**

Professor W.S. Luk has been selected as the external examiner for Computer Science for the period from 1996 to 1999.

Professor Luk is the Director of the School of Computer Science at Simon Fraser University, Canada. He received his B.A. in Mathematics from the University of London, his M.Math. in Applied Mathematics from the University of Waterloo, and his Ph.D. in Computer Science from the University of Alberta. He has been teaching at Simon Fraser since 1978, and a full professor since 1989. His main research interests is in databases. He has published in the Journal of the ACM, Communications of the ACM, IEEE Transactions of Software Engineering, and other international journals and conferences.

We are grateful to Professor John A. Campbell, Professor of Computer Science, University College London, for acting as our external examiner in Computer Science for 1994-1996.

"... my impression was that the Department had a high-quality teaching programme in which the set of available courses, and the contents and sequence of those courses, would educate its students to an internationally very competitive standard. My visit in June confirmed the impression. The Department can certainly be complimented on its achievements. ..."

We are also grateful to Professor Mike G. Rodd, Professor of Electrical and Electronic Engineering, University of Wales at Swansea, for acting as our external examiner in Computer Engineering for 1994-1996.

"... I believe the balance of material in this course is good and there is an effective ratio of basic theory to application. ... A special highlight of the program continues to be the compulsory Integrated Software Design Project - and again I was most impressed, if not overwhelmed, by the level students are getting to in this exercise. The work undertaken is most impressive, and the management skill instilled in the students will serve them well. ..."

**EXAMINATIONS
CAN BE FUN,
TOO**

Some readers may already be complaining why we introduce the topic of examinations in a newsletter which is meant to attract rather than deter readership. Well, examinations can be fun too. If you don't believe me, read the comments from the external examiners. For example, the following is a comment from the external examiner in Computer Engineering on the examination paper of FSI 23261:

"What a super paper! ... I would have to say that this is exactly what I would aim at - real practical examples of real problems, the solution of which must be based on a real understanding of the subject and its underlying principles. An entirely appropriate paper ... I really enjoyed reading this one!"

Of course, not all examination papers contain practical examples of real problems. Some examination papers contain fantasies. The following, for example, is an examination question from ISA 23398 which the external examiner in Computer Science found very interesting:



"The latest car used by James Bond is a BMW Roadster with back seat driving. ... A remote control looks like the standard control used in ordinary CD controls. ... If the On/Off button is pressed, a signal is sent from the remote control to the car. When the car receives this signal, it will test whether weight of the driver agrees with that of Bond. ... If the weight of the driver is not the same as Bond's, then backseat driving will be activated. ... When the Eject button is pressed, the backseat is ejected. (The air bag attached to the back seat will be inflated in the shape of a parachute to allow Bond to land safely.)"

I can anticipate more objections from readers. Our newsletter should not just tell the success stories of the Department. Hiccups should also be reported. Okay. The following is the hiccup:

Overwhelmed by the external examiners' positive comments, the internal examiner of ISA 23398 showed the question to his young son, who is a car enthusiast. (He did this after the examination.) His young son pointed out a very serious error in the question which was overlooked by the internal examiner, the three internal reviewers and the external examiner. Can you guess what it is?

There is no back seat in a BMW Roadster!

PROFILES

The following are the short profiles of two "new" teachers of our Department:



Dr. T.Y. Chen has been appointed as a Visiting Senior Lecturer for six months as from January 1997.

Dr. Chen received his B.Sc. and M.Phil. degrees in Physics from the University of Hong Kong, M.Sc. and D.I.C. in Computer Science from the Imperial College of Science and Technology, and Ph.D. in Computer Science from the University of Melbourne.

He is currently a Senior Lecturer in the Department of Computer Science, the University of Melbourne. Before joining University of Melbourne, he was a Senior Lecturer in the Department of Computer Science, the University of Hong Kong. His main research interests include program testing, software engineering, fixpoint theory, and logic programming.



Dr. S.M. Yiu has been appointed as a Temporary Lecturer for eight months as from September 1996.

Dr. Yiu received a B.Sc. degree in Computer Science from the Chinese University of Hong Kong, an M.S. degree in Computer and Information science from Temple University, and a Ph.D. in Computer Science from the University of Hong Kong. He was selected for a best tutor award since 1994/95. He has also worked for the RHKPF as an Analyst Programmer for two

years. His research interests are computational geometry and distributed algorithms.

The following is a long but interesting profile of an "as new" Associate Professor.



Dr. Francis C.M. Lau received his B.Sc. degree from Acadia University, and M.Math. and Ph.D. degrees from the University of Waterloo, all of them in Computer Science. He was a postdoctoral research fellow in the Computer Science Department in Waterloo before returning to Hong Kong.

Dr. Lau joined our Department in 1987, and is currently an Associate Professor. He was responsible for setting up the largest research group in our Department, specializing in distributed and parallel systems research, which

has attracted a large number of postgraduate students over the years. He is currently the supervisor of 12 graduate students (including 7 Ph.D. students). He has published one book and over 50 papers in the area of parallel and distributed computing. His most recent papers are on the routing problem and the load balancing problem in parallel computers.

Dr. Lau was an honorary secretary for IEEE Computer Society Hong Kong Chapter in 1988 and then the chapter's chairman in 1989 and 1990. He was a member of the Organizing Committee of IEEE Workshop on Future Trend in Distributed Systems (1988) and a vice chairman of the Program Committee for IEEE TENCON '90. He is also an active supporter of the Pacific Rim International Symposium on Fault-Tolerant Systems (serving as a Program Committee member in 1991, 1993, and 1997) and IEEE Symposium on Parallel and Distributed Processing (as a Program Committee member in 1992). He was the Local Arrangement Chair for IEEE's 16th International Conference on Distributed Computing Systems, held in Hong Kong in 1996. He has been serving in IEEE-CS's Asia-Pacific Activities Committee since 1990. One of the activities recently launched by the committee was the Distinguished Visitor Program for Asia-Pacific for which he is now the coordinator. He has also helped in IEEE-CS's Special Task Force on Student Effective Support Plan and the newly formed Student Activities Committee.

Locally in Hong Kong, Dr. Lau is an active member of the fast-growing computing community. He was elected into the Council of the Hong Kong Computer Society in 1990. He chaired the Society's Training and Education Committee in 1990, the Publications Committee in 1991, and the Professional Development and Examinations Committee in 1992. He was also one of the early promoters of open system technologies in Hong Kong and was instrumental in the formation of one of the first open systems special interest groups in Hong Kong. He was an advisor of the Institute of Research and Consultancy of the City University of Hong Kong and an external member of the Validation Panel for the Postgraduate Diploma in Computing of the same university. He is an external examiner for the Asia International Open University in Macau.

In his spare time, he listens to (and sometimes generates) classical music. He is an admirer of some of the greatest string players ever lived, and dreams of becoming a violin maker.

- Q. Huo and C. Chan, "A study on the use of bi-directional contextual dependence in Markov random field-based acoustic modelling for speech recognition". *Computer Speech and Language* 10: 95-105 (1996).
- P.K. Wong and C. Chan, "A Putonghua recognizer", in *Proceedings of 4th National Conference on Man-machine Communication in Speech*, Beijing, pp. 153-158 (1996).
- F.T. Chan, T.Y. Chen, I.K. Mak, and Y.T. Yu, "Proportional sampling strategy: guidelines for software testing practitioners", *Information and Software Technology* 38 (12): 775-782 (1996).
- T.Y. Chen, "On the structural properties of the set of fixpoints for nondeterministic recursive definitions", *Journal of Computer and System Sciences* 52: 80-86 (1996).
- T.Y. Chen and P.L. Poon, "Classification-hierarchy table: a methodology for constructing the classification tree", in *Proceedings of 1996 Australian Software Engineering Conference (ASWEC '96)*, IEEE Computer Society, Los Alamitos, California, pp. 93-104 (1996).
- T.Y. Chen and P.L. Poon, "Improving the quality of classification trees via restructuring", in *Proceedings of 3rd Asia-Pacific Software Engineering Conference (APSEC '96)*, IEEE Computer Society, Los Alamitos, California (1996).
- T.Y. Chen and Y.T. Yu, "A more general sufficient condition for partition testing to be better than random testing", *Information Processing Letters* 57 (3): 145-149 (1996).
- T.Y. Chen and Y.T. Yu, "More on the E-measure Subdomain Testing Strategies", in *Proceedings of 1996 Australian Software Engineering Conference (ASWEC '96)*, IEEE Computer Society, Los Alamitos, California, pp. 167-174 (1996).
- T.Y. Chen and Y.T. Yu, "On some characterization problems of subdomain testing", in *Proceedings of International Conference on Reliable Software Technologies (Ada-Europe '96)*, Alfred Strohmeier (ed.), *Lecture Notes in Computer Science*, Vol. 1088, Springer-Verlag, Berlin, pp. 147-158 (1996).
- T.Y. Chen and Y.T. Yu, "On the expected number of failures detected by subdomain testing and random testing", *IEEE Transactions on Software Engineering* 22 (2): 109-119 (1996).
- T.Y. Chen and Y.Y. Cheung, "On program dicing", *Journal of Software Maintenance: Research and Practice* (to appear).
- T.Y. Chen and M.F. Lau, "Dividing strategies for the optimization of a test suite", *Information Processing Letters* (to appear).
- T.Y. Chen and Y.T. Yu, "Constraints for safe partition testing strategies", *The Computer Journal* (to appear).
- Wun-Tat Chan and Francis Y.L. Chin, "Linear-time algorithms for unspecified routing in grids", in *Proceedings of the International Computer Symposium (ICS '96)*, Taiwan (1996).
- Wun-Tat Chan and Francis Y.L. Chin, "Efficient algorithms for finding disjoint paths in grids", in *Proceedings of 8th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA '97)*, New Orleans, Louisiana (1997) (to appear).
- Cao-An Wang, Francis Y.L. Chin and Yin-feng Xu, "A new subgraph of minimum weight triangulations", in *Proceedings of the International Symposium on Algorithms and Computation (ISAAC '96)*, Osaka, Japan, *Lecture Notes in Computer Science*, Springer-Verlag (1996).
- David W.L. Cheung, Ben Kao, and Joseph Lee, "Discovering user access patterns on the World-Wide-Web", in *Proceedings of 1st Pacific Asia Conference on Knowledge Discovery and Data Mining* (1997) (to appear).
- Joseph Lee, David W.L. Cheung, Ben Kao, Jax Law, and Thomas Yau, "Intelligent agents for matching information providers and consumers on the World-Wide-Web", in *Proceedings of 30th Hawaii International Conference on System Sciences* (1997) (to appear).
- Victor Lee, K.Y. Lam, and Ben Kao, "Impact of priority assignment on optimistic concurrency control in distributed real-time databases", in *Proceedings of the 3rd International Workshop on Real-Time Computing Systems and Applications* (1996).
- G. Chen and Francis C.M. Lau, "Shuffle-ring: overcoming the increasing degree of hypercube", in *Proceedings of Second International Symposium on High-Performance Computer Architecture (HPCA-2)*, San Jose, California, pp. 130-138 (1996).
- S. Cheung and Francis C.M. Lau, "Routing with locality on meshes with buses", *Journal of Parallel and Distributed Computing* 33 (1): 84-90 (1996).
- Francis C.M. Lau and G. Chen, "Optimal layouts of midimew networks", *IEEE Transactions on Parallel and Distributed Systems* 7 (9): 954-961 (1996).
- C.Z. Xu and Francis C.M. Lau, "Efficient termination detection for loosely synchronous applications in multicomputers", *IEEE Transactions on Parallel and Distributed Systems* 7 (5): 537-544 (1996).

**RESEARCH
PUBLICATIONS
(CONT'D)**

C.Z. Xu and Francis C.M. Lau, *Load Balancing in Parallel Computers: Theory and Practice*, Kluwer Academic Publishers, xv + 210 pp. (1997).

K.H. Pun, "The protection of well-known goods in China", *European Intellectual Property Review* 18 (10): 537-543 (1996).

K.H. Pun, "Five years since the Software Regulations: China's recent development on software copyright", *International Review of Industrial Property and Copyright Law* (to appear).

T.H. Tse and Z. Xu, "A formal framework for improving object-oriented software testing", *13th International Conference on Testing Computer Software*, Washington DC (1996).

T.H. Tse and Z. Xu, "Test case generation for class-level object-oriented testing", in *Quality Process Convergence: Proceedings of 9th International Software Quality Week (QW '96)*, San Francisco, California (1996).

T.H. Tse and C.P. Cheng, "Modelling and visualizing object-oriented systems: a NOODLE approach", *Meeting of IFIP Working Group WG2.2 on Formal Description of Programming Concepts* (1996).

T.H. Tse and C.P. Cheng, "NOODLE++: a 3-dimensional net-based object-oriented development model", in *Methods Integration: Proceedings of 2nd Methods Integration Workshop*, A. Bryant and L. Semmens (eds.), electronic Workshops in Computing (eWiC) series, Springer-Verlag, London (1996).

T.H. Tse, "Integrating object-oriented and formal specifications: a FOOD approach", in *Proceedings of IT Congress '97*, Macau (1997) (to appear).

K.W. Chiu and S.M. Yiu, "A simulation on how object technology is applied in CAD", in *Proceedings of International Conference on Circuits and System Sciences (ICCASS '96)*, Shanghai, pp. 66-69 (1996).

S.M. Yiu, "A tight bound result for combinatorial edge guards in rectilinear art galleries", in *Proceedings of International Conference on Circuits and System Sciences (ICCASS '96)*, Shanghai, pp. 266-268 (1996).

C. Hsu and Lester W. Yee, "The four dimensional visual information universe: an illustration", *Sun Yat-sen Management Review* (to appear).

A fox, walking through a wood, sees a rabbit. He is about to pounce, when he notices that the rabbit appears to be writing. The fox presents himself and asks the rabbit what he is doing. "I'm writing my thesis," the rabbit replies. Astounded, the fox asks about the subject. "It's about rabbits eating foxes." The fox begins to laugh, and so the rabbit invites him into a nearby cave for a demonstration.

Meanwhile, a wolf has been watching this, and is surprised to see the rabbit emerge from the cave, with no sign of the fox. The wolf then presents himself, and asks the rabbit if he thinks he can eat a wolf. "That was not in my research proposal, but I'm sure I can manage that," answers the rabbit. As the wolf approaches the cave, he sees a shadow in the corner. "Who's that?" He asks, and the rabbit replies, "Oh, that's the lion, my supervisor."

The moral of the story: It is the weight of the supervisor that counts.

—from various sources

**PRIZES AND
AWARDS**

Congratulations to the following staff and students for their recent awards:

Miss Vivian Mak for the Chan Kai Ming Prize in Engineering, the Hong Kong University Alumni Prize, a Chinese Manufacturers' Association and Donor Scholarship, an AST Scholarships, and the Dean's Honours List. She is our first graduate ever to have obtained straight A's in both parts of the final examination. She received a special round of applause at the Graduation Ceremony of the Faculty of Engineering held at the City Hall on November 28, 1996.

Mr. Lee Kit Lun for the Ho Fook Prize in Engineering and the Walter Brown Memorial Prize in Mathematics.

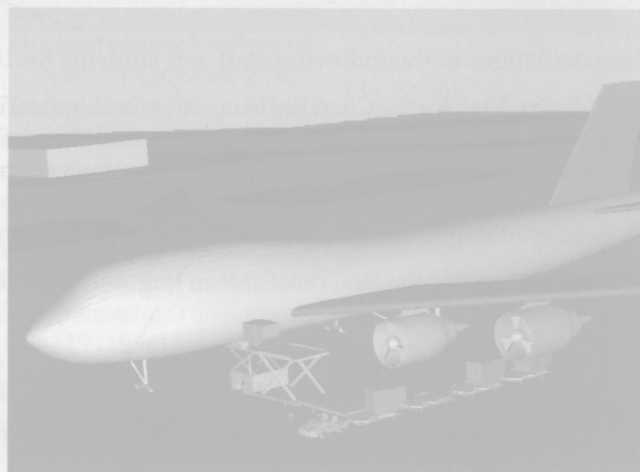
Dr. K.H. Pun for his selection for the Teaching Excellence Award for 1995/96. He has in fact been selected as the best teacher of the Department since 1994.

Miss Choi Ying, Mr. Kelvin T.L. Chung, Mr. Isaac K.K. To, Mr. Beta C.L. Yip, and Dr. S.M. Yiu for their selection as the Outstanding Tutors of the year.

Dr. T.H. Tse for the award of an Academic Exchange Visitorship for the University of Melbourne in July and August 1996 under the University of Hong Kong-University of Melbourne Academic Staff Exchange Program.

RESEARCH AND INDUSTRIAL GRANTS

Principal Investigator	Project	Funding Body	Amount Awarded
Dr. K.P. Chan	A printed Chinese document recognition and translation system for office automation	Industrial Support Fund	4,400,000.00
Professor C. Chan	Recognizing hand written Chinese characters by contextual vector quantization	Research Grants Council	416,000.00
Dr. David W.L. Cheung	Discovery and maintenance of association rules in large databases	Research Grants Council	416,000.00
Professor F.Y.L. Chin	Multiresolution polygonal/subdivision Approximation	Research Grants Council	416,000.00
Dr. Ben Kao	Real-time database systems	Research Grants Council	362,000.00
Dr. Francis C.M. Lau	Load balancing in multicomputers	Research Grants Council	416,000.00
Dr. C.L. Wang	High performance computing for irregularly structured problems on distributed-memory machines	Research Grants Council	416,000.00
Professor C. Chan	On-line recognition of cursively hand-written Chinese characters	Committee on Research and Conference Grants	95,000.00
Dr. David W.L. Cheung	Mining association rules in distributed databases	Committee on Research and Conference Grants	85,000.00
Dr. T.W. Lam	Approximation algorithms for biconnectivity	Committee on Research and Conference Grants	120,000.00
Dr. H.F. Hing	Routing on fibre optic networks	Committee on Research and Conference Grants	85,000.00
Dr. T.H. Tse	SAD_FACT: a structured analysis and design framework using algebraic semantics and category Theory	Committee on Research and Conference Grants	120,000.00
Dr. W.P. Wang	Computing intersection curves of quadric surfaces	Committee on Research and Conference Grants	100,000.00
Dr. Lester W.M. Yee	Visualization user-interface for enterprise information management	Committee on Research and Conference Grants	50,000.00
TOTAL			7,497,000.00



A snapshot of the animation of the ground handling operations for the new Chek Lap Kok Airport
(See Industrial Support Projects on page 7)

A PRINTED CHINESE DOCUMENT RECOGNITION AND TRANSLATION SYSTEM FOR OFFICE AUTOMATION

Dr. K.P. Chan and Professor C. Chan obtained a grant of \$4.4 million from the Industrial Support Fund for their joint project on a Chinese document recognition and translation system. The following is a brief introduction from the principal investigator Dr. K.P. Chan.

Processing Chinese Document has always been a problem in modern offices in Hong Kong, China, and Taiwan. Currently, the information is entered by typists who are fluent in Chinese input. Automated systems to perform such tasks are already very popular in Western society and are essential in a modern office. Since the problem is much more difficult for Chinese documents, viable commercial product is still not available.

Hong Kong is an international city where we need to communicate in both Chinese and English. Large volumes of information in Chinese documents, newspapers, and magazines have to be translated into English every day. However, automatic language translation is a very difficult problem. What we propose is to develop a translation system which will produce understandable output so that the user will know whether the document is worth retrieving, even if the user does not understand Chinese. It will also act as a basis for post-processing by human to correct any remaining mistake and make it more natural.

Our project plan is (a) to develop a system for recognizing multi-font multi-size printed Chinese characters and (b) a computer-aided translation system which produces satisfactory results.

A SIMULATION STUDY OF THE GROUND HANDLING OPERATION FOR THE NEW CHEK LAP KOK AIRPORT

Dr. C.F. Chong, Dr. K.P. Chow, and Dr. W.W. Tsang were recently commissioned by the Hong Kong Airport Services Limited (one of the three companies granted franchise to operate ground handling services in the new Chek Lap Kok Airport) to carry out a simulation study of ground handling operations for the new airport in Chek Lap Kok. The following is a short description of the project by the project leader Dr. C.F. Chong.

The new airport in Chek Lap Kok is scheduled to start operation in April 1998. Three different companies have been awarded franchise to provide ground handling services in the new airport to foster competition. In order to be competitive, it is imperative that the various services have to be delivered in the most efficient manner. The main objective of this study is to evaluate several modes of operations for providing ground handling services to determine the most efficient one. Since the new airport is not yet in operation, the evaluation study has to be based on simulation.

A study of the current ground handling operation in the Kai Tak Airport has been performed over the summer to collect data to be used as input to the simulation models. The data are also used to validate the simulation models. The simulation study can be used to identify potential bottlenecks in the different operation modes as well as to determine resources requirements for each mode. Since most modes of operations have not actually been used in Hong Kong, it is very desirable that potential problems be identified through simulating their operations. Moreover, it is also very important during the planning stage to know the resources requirements for different levels of services so that appropriate investment can be made in capital equipment.

An animation of the ground handling operations for the new CLK airport is currently being developed in parallel with the simulation which will form part of the exhibits in the upcoming "Technology Exhibition" to be held in the Hong Kong Convention Centre in January 1997.

KEEP IN TOUCH!
VISIT OUR DEPARTMENTAL HOMEPAGE:
<http://www.cs.hku.hk/>

SCHOOL BEGIN
BARBECUE
(SBB)

Teresa R.F. Chang
(M.Phil. Student)

One of our CS department traditions is to have a barbecue gathering for all M.Phil./Ph.D./M.Sc. students, demonstrators, research assistants, and technical staff, shortly after courses have kicked off in the first term. The objective of this gathering is to let us know each other a bit more and to have some fun.

The two SBB organizers this year are the famous *uncle Wah* and *uncle Joe*. The date for SBB was set to Friday October 4, 1996 and the venue was at Fortress Hill (behind the University campus). Everybody was reminded to bring a *light server* (electric torch) because the BBQ was held in almost total darkness. It was hard to tell if the food was fully cooked or ready for eating. Most likely the food, especially meat, was still at most medium done. All of us enjoyed the occasion, anyway.

There were seven kindhearted volunteers to help buying food, drinks, utensils, and miscellaneous stuff at around 5 PM. Purchase group was divided into two subgroups so that processing could be done in parallel. The meat group included *uncle Wah*, *elder sister*, and a nice guy. The fork group included very shy Teresa, *Dou sir*, Ken, and *Wong Kit*. Each subgroup was further divided into mini-groups such that, inside subgroup, jobs were also done in parallel to suit the tight time limit to buy things. What a concurrency control problem!

A total of 22 people participated in this event, which included 2 drop-bys. The unofficial statistics showed that, there were 1 staff member, 2 new part-time M.Sc.'s, 1 new full-time M.Sc., 2 full-time Ph.D.'s, 3 full-time new M.Phil.'s, 1 friend of an M.Phil., and the rest were full-time old M.Phil.'s. We started climbing up the hill at around 6 PM. Everyone was cooperative and there were also several pairs of helping hands. There were even some joke experts who provided enjoyable entertainment.

At Fortress Hill, two adjacent barbecue stoves (which we called *fire servers*) were set up. As well, about 4 or 5 *light servers*, including 1 mini *light server*, were administrated by individuals on shift. *Light servers* were managed in a distributed way and called up when required. Sometimes, there was too much *electricity* supplied to one of the *fire servers*, or, when one of the *fire servers* was almost shut down due to lack of *electricity* supply, some users did *process migration* to another *fire server* to continue the *jobs*.

All *client stations* were assembled on the other side of the *fire servers*. Some *system administrators* of *client stations* were on hand to add spices to food stuff.

After the BBQ, there was a *beauty pageant* held around the fire server. First, number 1 *beauty* introduced *himself* ... and so on. One FAQ was 'Do you have boy/girl-friend already?' Another FAQ was 'Has someone been into your romance yet?' The unpopular FAQ was 'What is your staff number?' The ensuing pleasant and friendly chatting enhanced better understanding of one another.

Beta undertook the task of taking photos of us during the entire event. His skill is very good, as all the photos were taken in a very dark background. We were temporary blinded a number of times after exposing to the very bright flash light from the camera.

The whole event ended at around 10 PM. The expense for each head was under \$40.

This has been a very memorable event. Perhaps SBB could have been held in a better illuminated location, or during the day. Perhaps the meat steaks could have been sliced into thinner pieces, and the purchase estimation could have been made a little bit more accurate. Despite all these, this year's SBB was a very enjoyable and highly successful event. This occasion has provided a very good opportunity for colleagues to get to know each other. We hope there will be more SBB participants next year to share the joy.

Question: What have these three activities in common?

1. Building a 12-meter yacht to compete in the American's Cup,
2. Building a Formula 1 racing car, and
3. Building a software order-entry system.

(Answer on page 11)

CONFERENCE GRANTS

Name	Conference	Venue	Dates
Professor C. Chan	International Conference on Computational Linguistics	Copenhagen, Denmark	August 5-9, 1996
Dr. David W. L. Cheung	International Conference on Very Large Databases	Bombay, India	September 2-6, 1996
Dr. Ben Kao	5th International Conference on Extending Database Technology	Avignon, France	March 25-29, 1996
Dr. T.W. Lam	7th Annual Symposium on Algorithms and Computation	Osaka, Japan	December 16-18, 1996
Dr. T.H. Tse	2nd Methods Integration Workshop	Leeds, UK	March 25-26, 1996
Dr. Lester W.M. Yee	IASTED/ISMM International Conference on Intelligent Information Management Systems	Washington DC, USA	June 5-7, 1996
Mr. Chen Guihai (Ph.D. student)	2nd Information Symposium on High-Performance Computer Architecture	San Jose, California, USA	February 3-7, 1996
Mr. Chung Tat Leung (M.Phil. 1996)	Pacific Graphics '96	Hsinchu, Taiwan	August 19-22, 1996
Mr. Hubert H.C. Law (M.Phil. student)	1996 IEEE International Conference on Acoustics, Speech and Signal Processing	Atlanta, Georgia, USA	May 7-10, 1996
Mr. Sung Wing Kin (M.Phil. student)	5th Scandinavian Workshop on Algorithm Theory	Reykjavik, Iceland	July 3-5, 1996
Mr. Wong Chi Hung (M.Phil. student)	International Conference on Chinese Computing '96	Singapore	June 4-7, 1996
Mr. Wong Pak Kwong (Ph.D. student)	1996 IEEE International Conference on Acoustics, Speech and Signal Processing	Atlanta, Georgia, USA	May 7-10, 1996
Mr. Xu Zhinong (Ph.D. student)	13th International Conference on Testing Computer Software	Washington DC, USA	June 10-13, 1996



A snapshot of the happy faces around one of the *fire servers* in our 'School Begin' BBQ (details on page 8)

INFORMAL

SEMINARS:

TGIF/pts

Mr. Beta C.L. Yip
(Ph.D. Student)



TGIF (Thank God It's Friday) and pts (postgraduate talk series) are two series of informal seminars for staff and postgraduates speakers in the department. Being the only regular informal seminar series on Fridays with refreshments, they attract many people in the department and laughters are often heard outside the seminar room. The topics for the seminars in the first semester were:

20-09-1996	pts	Chung Tat Leung, Kelvin	Collision Detection in Virtual Environments
27-09-1996	pts	Chan Wun Tat	Disjoint Paths in Grid
04-10-1996	pts	Lee Sau Dan	Digital Cash
11-10-1996	TGIF	Dr. Jerome Yen	Intelligent Spider
18-10-1996	pts	Yip Chi Lap, Beta	From 5 bits to 32 bits
01-11-1996	pts	Wong Kai Leung, Adam	Parallel Processing: Occam and Transputer
08-11-1996	TGIF	Dr. Benjamin Kao	Concurrency Control in Real-time Databases
15-11-1996	pts	Tam Wai Kee, Benjamin	Data Mining
22-11-1996	TGIF	Dr. Francis C.M. Lau	The Ubiquitous Mesh
29-11-1996	pts	P.F. Tsang, Dex	Network Computer

There will be six pts and six TGIF sessions in the second semester:

Series	January	February	March	April
TGIF	10, 24	14	07, 31	11
pts	17, 31	21	14	04, 18

Two of them have been filled:

10-01-1997	TGIF	Dr. Wang Wen Ping	NURBS Sweep Surface Modeling
31-01-1997	pts	Kwan Chun Tak, Doug	MPEG2

So, there are still 10 sessions for staff and postgraduates in the department to be speakers. Speakers just need to prepare for a half-hour talk. Your support is needed. If you are interested to become a speaker, please email Dr. Benjamin Kao (TGIF) kao@cs.hku.hk or Yip Chi Lap, Beta (pts) clyip@cs.hku.hk for registration.

CS FESTIVAL

3C Committee



Following the popping sound of balloons, the CS Festival as well as the Singing Contest started on 23/10 in the Rayson Huang Theatre. With the effort of OCs, workers and MCs, we did have a smooth running contest, and did make the night full of joy and fun. The Year 3 students won the close match with the Staff and Postgraduate Team (57.05 vs. 57.00).

It also marked the beginning of the CS Competition 96, with totally 9 events including the Singing Contest. The other 8 events were Chess, Basketball, Football, Bridge, Badminton, Table Tennis, Tug of War, and Big2. The events were being held in the following 3 weeks under a tight schedule. After those fierce and interesting heats and finals, the final results are as follows:

Year 3	Champion
Staff + Postgraduates	1st runner-up
Year 1	2nd runner-up
Year 2	3rd runner-up

The CS Nite was held in Newton Hotel on 7/12. In addition to the buffet high-table dinner, there were a lot of interesting programmes, such as mass games, lucky draws, etc. In a happy atmosphere, the CS Nite had been finished, brought the CS Festival which lasted for over a month to an end. I would like to give thanks to all OCs in providing us such a wonderful Festival.

Last but not the least, I would like to thank all guests and participants who spared their precious time in participating in the activities; without your support, all the effort by the OCs would be in vain.

Though CS Festival was over now, the 3C Committee will continue to provide a lot of activities for all the members, and I hope all of you can continue to support us in the future.

3 Cheers for all of us! 3 Cheers for CS Competition 96! 3 Cheers for CS Festival 96!

3C Committee (3ccom@cs.hku.hk)

EMPLOYMENT SURVEY 1996

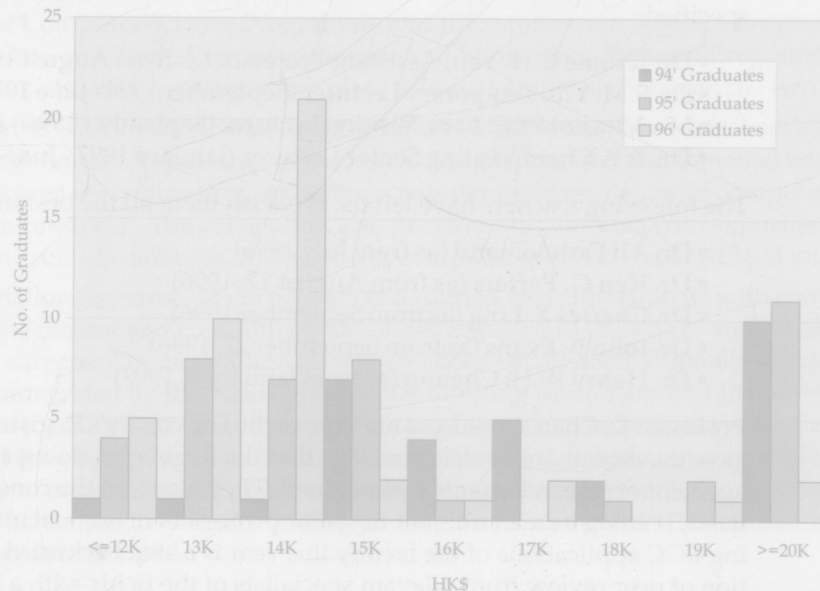
An Employment Survey was conducted in October 1996 for the recent 3 years of CS and IS graduates (1994-1996). Over 2/3 of the graduates responded and the results have been tabulated below. The composition of the respondents include:

- 1994 Graduates 66.1% (39 out of 59)
- 1995 Graduates 77.4% (48 out of 62)
- 1996 Graduates 83.6% (51 out of 61)

The average income of our 94', 95' and 96' graduates in 1996 are HK\$17,355, HK\$16,071, and HK\$14,398 respectively. Here, we present an income comparison chart of our graduates in the past 3 years. Please refer to our employment survey Web page for more details:

<http://www.cs.hku.hk/survey/employment/1996/>

94-96' CS & IS Graduates Income Comparison in 1996



ALUMNI MATTERS

Mr. William K.P. Chan
(CS89 Graduate)

The idea of forming an alumni association for Computer Science graduates has been planted in my mind for a long time. Some of the objectives are to liaise with all HKU Computer Science graduates, to provide a link between the graduates and the Department, and to contribute to society at large in the Computer Science, Computer Engineering, and Information Technology fields.

As a member of the Board of Directors of the Alumni Association, I would like to report some of the major events that have taken place. An organizing committee was formed in 1995 and the Alumni Association was registered under The Companies Ordinance (Chapter 23) as a nonprofit making organization under the name "HKU Computer Science Alumni Association Limited" on January 16, 1996. An official opening of the Alumni Association was held on April 26, 1996 in the Computer Science Department, with opening speeches by Dr. Paul Y.S. Cheung (Dean of Engineering Faculty) and Professor Francis Y.L. Chin (Head of Computer Science Department). A UNIX server with dial-up service was set up on July 1, 1996, offering Internet services to Alumni members at a very competitive price.

The Alumni Association currently has over 100 members. If you like to get more information or apply for membership, please refer to the our homepage <http://www.hkucs.org/>, or contact Daniel Hung on 2859 2188.

Answer: They all cost more than \$1 million and for the same reason: Each is a custom product designed and constructed manually by skilled and highly paid craftsmen. (They have something more subtle in common too: Not one of the three is likely to stay competitive for more than a year or so. And all three are difficult and costly to modify or update once they are built.)

– Capers Jones, IEEE Computer

We would like to congratulate:

- **Dr. T.W. Lam** for his promotion to an Associate Professorship as from August 1996 and the birth of his son in November.
- **Ms. Maria Lam**, Senior Secretary, for the award of a B.B.A. from the Open Learning Institute and the birth of her son in April 1996.
- **Ms. Brenda Ng**, Executive Officer, for the award of an M.Phil. in Music from the University of Hong Kong.
- **Mr. Samson T.Y. Sin**, Computer Officer, for the award of an M.Sc. in Computer Science with distinction from the University of Hong Kong.
- **Dr. C.L. Wang**, Assistant Professor, for the birth of his daughter in October 1996.
- **Dr. S.M. Yiu**, Temporary Lecturer, for the award of a Ph.D. in Computer Science from the University of Hong Kong.

We would like to welcome the following teachers who join our department on the dates specified:

- **Dr. Jerome C.H. Yen**, Assistant Professor (as from August 1996)
- **Dr. S.M. Yiu**, Temporary Lecturer (September 1996 - June 1997)
- **Mr. Vincent W.C. Lam**, Visiting Lecturer (September 1996 - June 1997)
- **Dr. T.Y. Chen**, Visiting Senior Lecturer (January 1997 - June 1997)

The following teachers have left us. We wish them all the best in their new career.

- **Dr. Ali Farhoomand** (as from July 1996)
- **Dr. Ken G. Peffers** (as from August 12, 1996)
- **Dr. Charles X. Ling** (as from September 1996)
- **Dr. John B. Evans** (as from September 27, 1996)
- **Dr. Henry W.H. Cheung** (as from January 9, 1997)

Professor C. Chan served as a member of the University's Registry Review Panel. The Panel gave the consultants a clear message that the Registry is doing a good job as far as the management of research grants is concerned. They also told the consultants that, on the other hand, holding a small number of senior professors of each faculty responsible for scrutinizing RGC applications of the faculty this year is a step backward compared against the tradition of peer review from relevant specialists of the fields with a large number of reviewers from within and outside the University. The reason is that no professor, no matter how competent, is able to know enough of the area of specialty of every proposal assigned to him/her to do the job properly. These professors should be advised to seek help from a broad network of expertise.

Dr. Ka-Wong Chong, former Ph.D. student of **Dr. T.W. Lam**, recently joined the Max-Planck Institute of Germany as a postdoc and will continue his research in theory there.

Dr. Ben Kao served as an Executive Committee Member of ACM Hong Kong, who organized the 1996 Scholastic Programming Contest in the summer.

Dr. Ben Kao served as a member of the Advanced Level Computer Studies Joint Working Party of the Hong Kong Examination Authority.

Dr. Ben Kao was invited to give a Popular Science Lecture '96 on "The Art and Science Behind the Cyberspace" at the Hong Kong Science Museum on 22 December, 1996.

Dr. K.H. Pun was invited to give a presentation entitled "Regulatory issues on the Internet" in June 1996 at the Conference on Databases and Networks in China, jointly organized by the Centre of Asian Studies and Law-on-Line of the University of Hong Kong.

Dr. T.H. Tse has been invited to serve on the program committee of the 21st IEEE Annual International Computer Software and Applications Conference (COMPSAC '97) to be held in Washington DC in August 1997.

Dr. T.H. Tse has been invited to serve on the program committee of the International Conference on Technology of Object-Oriented Languages and Systems (TOOLS Asia '97) to be held in Beijing in September 1997.

Dr. S.M. Yiu attended the 1996 International Conference on Circuits and System Sciences (ICCASS '96) held in Shanghai, China from June 20 - June 25.



OCTOBER 1997

SPECIAL ISSUE FOR JUPAS APPLICANTS

COMPUTER SCIENCE AND INFORMATION SYSTEMS PROGRAMME B.Sc.(CSIS)

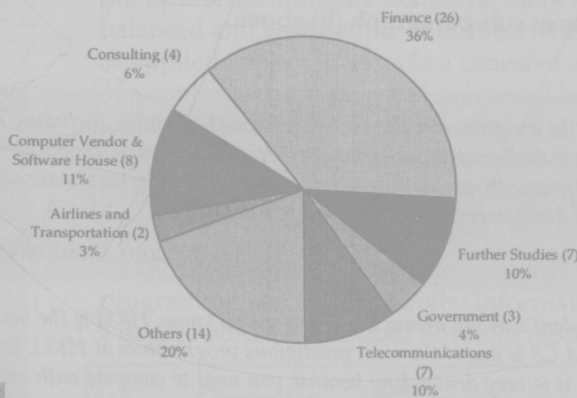
With effect from July 1, 1998, the Department of Computer Science at the University of Hong Kong will be renamed as the "Department of Computer Science and Information Systems". The Computer Science Programme and the Information Systems Programme will be integrated into one single Computer Science and Information Systems Programme in which students can, at their own discretion, place different emphasis between the two streams.

The Computer Science curriculum incorporates recommendations from American and British professional computer societies, and is designed to offer fundamental education in the various areas of computing, including computer systems, theory of computing, and software engineering. The curriculum also provides the students with exposure to computer applications such as database management, computer graphics, and artificial intelligence.

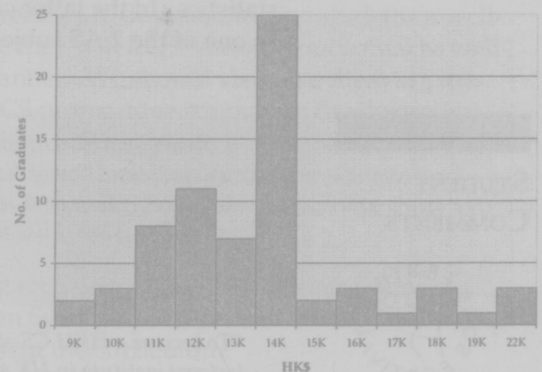
The Information Systems (IS) curriculum is designed to equip students with computing as well as management and communications skills required to undertake such challenging and promising careers. The curriculum is broadly based on the internationally-accepted curricula recommended by the Association for Computing Machinery and the newly-founded Association for Information Systems and is custom-made to incorporate emerging issues specific to Hong Kong and Asia Pacific. The IS stream is grounded in a multi-disciplinary philosophy of education. It is designed to prepare students as information specialists in today's fast-changing business world by striking a balance between technical, management and communications skills.

EMPLOYMENT SURVEY OF GRADUATES

Employment by Sectors



Monthly Salary (HK\$)



This Issue

B.Sc.(CSIS)	1
Employment Survey	1
Homepage	2
Minimum Entrance Requirement	2
Student Comments	2

The Employment Survey of Computer Science and Information Systems 1997 Graduates was conducted in October 1997 with 91% (71 out of 78) of graduates responded.

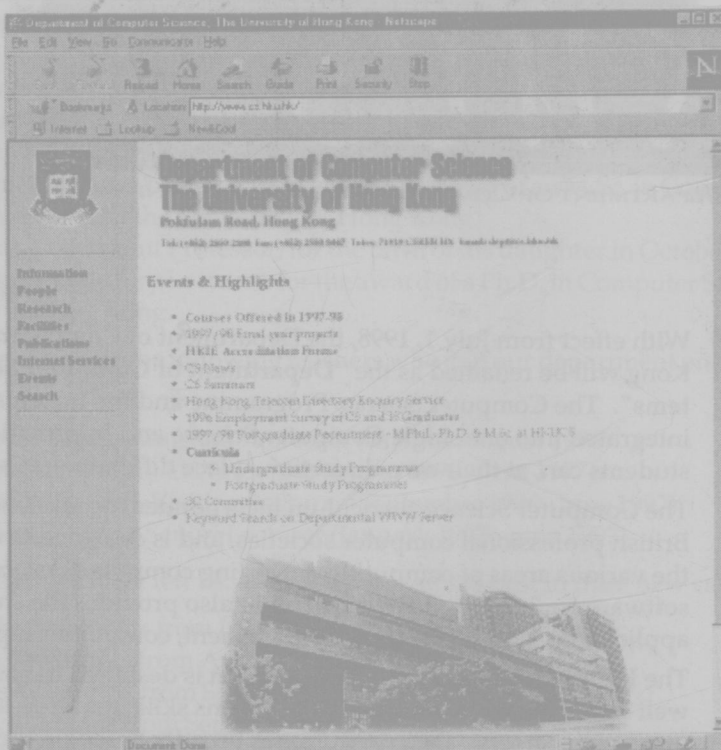
SUMMARY OF 1997 GRADUATES' EMPLOYMENT SITUATION

- 2 graduates joined one of the major computer vendors, IBM and 3 graduates joined the Information Technology Services Department of the Hong Kong Government.
- Over 42% of graduates joined major local companies such as Hongkong Bank, Hang Seng Bank, General Electric, HK Towngas, Cathay Pacific Airways and Hongkong Telecom.
- Some graduates have received more than 3 job offers.
- The average starting salary is around HK\$14,000 per month.
- 3 graduates earned over HK\$22,000 per month.

HOMEPAGE

For more information about our department, please visit our homepage:

<http://www.cs.hku.hk>



MINIMUM ENTRANCE REQUIREMENT

- grade E or above in 2 AL subjects (pure mathematics, applied mathematics, biology, business studies, chemistry, computer studies, economics, engineering science, geography, government and public affairs, physics, principles of accounts, psychology, sociology); and
- grade E or above in either any additional 1 AL subject or 2 AS subjects; however
- if none of the AL subjects is pure mathematics: either grade C or above in mathematics or additional mathematics at HKCEE, or grade D or above in the AS subject mathematics and statistics. In the latter case, the AS subject mathematics and statistics can be counted again as one of the 2 AS subjects in sub-paragraph (b) above.

STUDENT COMMENTS



"... Apart from working on the assignments, there are many social activities, including those held by the department. One of them is the Social Mixer. Through the function, you will know more about your classmates, tutors and lecturers. In my opinion, the tutors and the lecturers are very nice and responsible. Thus, I like the department and enjoy the environment."

C.K. Lau (Kitson), Graduate of CS, 1996

"To become a HKU CS student was my dream in F.7. As we all know, HKU is the most reputable tertiary institute in HK and CS is one of the most prestigious programmes at HKU. Even though CS is my subject of choice, it is very demanding because you need to compete with many brilliant students ..."

Y.C. Ip, Graduate of CS, 1996

"...The most special feature of our department when compared with those in other universities in Hong Kong is its smaller size. As a result, the environment of our department is so warm that it feels like a family. Students within the department know each other well. We eat, play and hurry for projects together. Also, our relationship with the lecturers is very good. Humour and laughter is always part of lessons. Studying in such an atmosphere definitely makes school-life very enjoyable. ... Perhaps the most attractive thing for you to join us is that all the students in our department are working together towards the objective of being the best. You will definitely be proud to be one of us."

Janette Chung Wui Kuen, External VC 1994-95
Student Organization of CS Department, HKU

hkucs news



PUBLISHED BY DEPARTMENT OF COMPUTER SCIENCE, THE UNIVERSITY OF HONG KONG

EDITOR: DR. T.H. TSE

SUB-EDITOR: MR. SAMSON T.Y. SIN

NOVEMBER 1997

VOLUME 4 NUMBER 1



THE BAD NEWS



We are very sorry to announce that this is the last issue of "HKUCS News". After reading this issue, please remember not to throw it away, but keep it as a souvenir item. Do not forget to ask your friends in the Department to sign on it.

THE GOOD NEWS

We are pleased to announce that we are going to present a more forward-looking newsletter known as CSIS News. If you are interested in finding out more about the reasons for the change, do not miss the article "CSIS Department". If you would like to have a review of how the future newsletters may look like, do not miss the article "A New Logo" in this issue.

THE CSIS DEPARTMENT

The Department of Computer Science will be renamed as the "Department of Computer Science and Information Systems" with effect from July 1998. The degree of B.Sc. in Computer Science will also be renamed as the degree of "B.Sc. in Computer Science and Information Systems".

Among the major reasons for the name changes are the following:

- (a) The popularity and success of the Information Systems programme have changed the shape of the Department. In the academic year 1997/98, 40 students will be admitted to the Information Systems programme, compared with 39 for the Computer Science programme.

Academically, the Computer Science and Information Systems programmes should not be seen as mutually exclusive. Both streams are designed to give students a well-balanced and worthwhile education where they will learn various conceptual as well as applied subject matters in a cohesive manner. We should visualize them as parts of a continuous spectrum of courses. The CS programme stresses on the theoretical and conceptual aspects of computing, while the IS programme concentrates on the application aspects. Our aim is to educate future leaders in computer science and information systems, as we have done in the past. An abstract summary is shown in Figure 1, and the common educational needs are illustrated in Figure 2.

As the Information Systems programme is not a subset of the Computer Science programme, the students in the Information Systems programme have been receiving a degree whose name does not fully represent the curriculum.

This Issue

The Last Issue	1
The CSIS Department	1-2
A New Logo	3
Project News	3
Profiles	4
Book News	5
Accommodation Matters	5
Research Grants	6
Equipment Corner	6
Conference Grants	7
Awards	7
Employment Survey 1997	7
Recent Publications	8-11
Snapshots of the Retreat	11
News	12
Thoughts	12

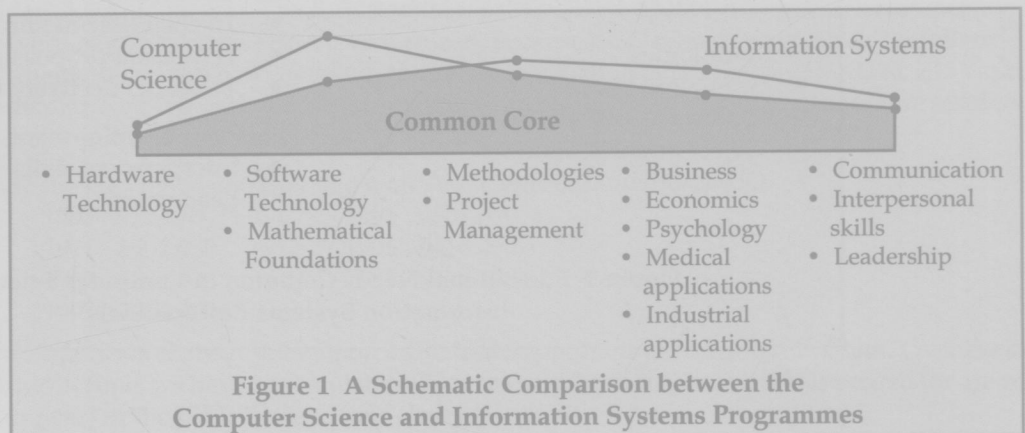


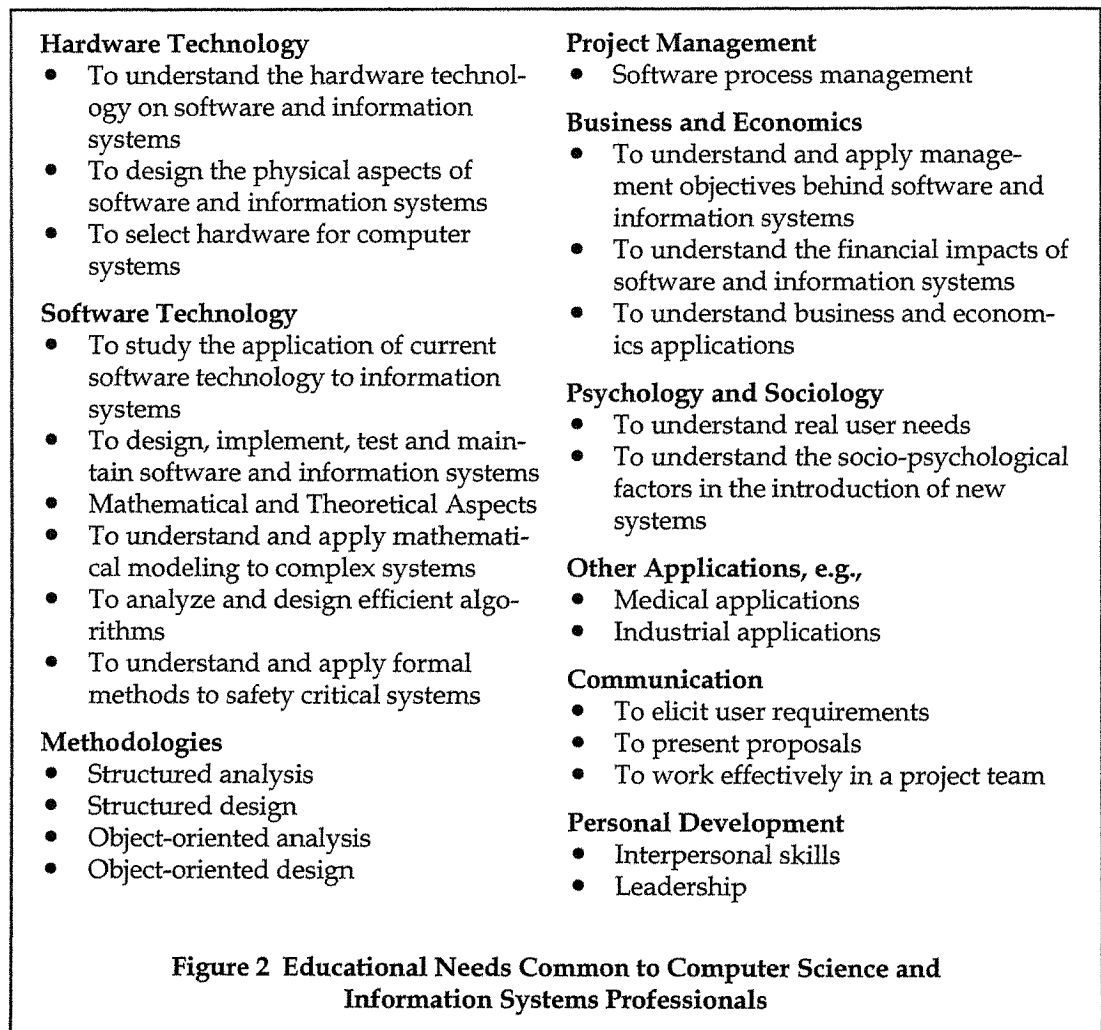
Figure 1 A Schematic Comparison between the Computer Science and Information Systems Programmes

- (b) As an increasing number of people need faster and more accurate information to perform their jobs, companies need information systems professionals who can understand not only the technical aspects of computing, but also the emerging behavioral, managerial and organizational issues surrounding the collection, dissemination and management of information. The advent and proliferation of personal computers and the general trend towards distributed computing has further prompted many companies to look for a new breed of information specialists who can act as a liaison between the technical staff and professionals working in various departments in the company. This demand will compel an increase in the number of Information Systems students in the Department.

The strong demand for Information Systems professionals will also lead more students of the Computer Science stream to opt for IS courses. This phenomenon will be amplified after the introduction of the credit-unit system, whereby students will be given even more flexibilities in choosing their own courses.

A name change would help not to mislead potential employers of both types of graduates.

Our joint programme in Computer Engineering with the Department of Electrical and Electronic Engineering will not be affected. Nor will our collaboration with the Business School for the MIS programme and the Department of Psychology for the Cognitive Science programme.



A NEW LOGO

We have commissioned a designer to propose a new logo for the CSIS Newsletter. It may also be adopted for the Department if deemed fit.



DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS THE UNIVERSITY OF HONG KONG

We have selected a winning design because it portrays the following attributes:

- The acronym "CSIS" of the new Department.
- Two equal partners (CS and IS) in the Department and a bridge between them.
- A department which is strong, dynamic, promising, open, cooperative, outreaching, and supportive.
- A department which is the obvious choice of applicants.
- Zero and one for computer science and input and output for information systems.
- A bridge of the traditional Chinese style and the latest logo style.

You are welcome to send your comments and any other suggestions to the designer at "csnews@cs.hku.hk".

Other honorable mentions:



The designer received several awards from logo design competitions. His work was reviewed favorably by both design experts and newspapers, but sometimes plagiarized by student associations. His latest work is the design of the 25th anniversary logo for the Hong Kong PHAB Association, as featured in a limited-edition souvenir watch. Recognizing that his subjective logo designs do not help him to earn a living, however, he also toils hard teaching object-oriented design in this Department.

PROJECT NEWS

A Real-Time Speaker Independent Putonghua recognizer for the Deafs

Professor Chorkin Chan

A few years back, we were awarded HK\$0.5 million by the Research Grants Council (RGC) to build a Putonghua recognizer. The amount was about half the money we originally needed to build the recognizer, and hence we were never able to complete the task. However, with the grant, we managed to have two versions of a Putonghua database, viz., HKU93 and HKU96, built. They have been acquired by important organizations like AT&T, Microsoft, Apple, Motorola, ATR and many others.

Building a database is very tedious. The results are not immediately publishable, and yet it costs a lot of time and money. That is why most researchers stay away from such an uninteresting undertaking. However, a well-done database has great impact to the research community. We are very happy that this effort is recognized, because RGC rates this project as "excellent". Let me thank those who had contribution to the construction of HKU93 and HKU96, ZU Yiqing in particular, for their painstaking efforts. Let us challenge ourselves to produce more results with impacts in the future.

Over the past ten years, we have won 7 RGC grants:

1987	\$752,300	1995	\$638,000
1991	\$505,000	1996	\$416,000
1992	\$242,000	1997	\$512,600
1993	\$266,000		

In addition, we shared a 4.4 million Industrial Support Fund with Dr. K.P. Chan. Over the same period of time, we have accumulated 17 journal publications, 5 of which appeared (or are going to appear) in the IEEE Transactions class of journals.



Professor Kai Hwang received his Ph.D. degree from the University of California at Berkeley. He has engaged in computer research and higher education for 25 years. He was a Professor of Electrical Engineering and Computer Science at the University of Southern California before his current appointment as the Chair in Computer Engineering at the University of Hong Kong.

Professor Hwang is an IEEE Fellow. He served as a Distinguished Visitor of the Computer Society, the ACM SIGARCH Board of Directors, and has been the founding Co-Editor-in-Chief of the Journal of Parallel and Distributed Computing since 1983. He is the author or co-author of 140 scientific papers and five books, mostly related to computer architecture and parallel processing.

His latest book, *Advanced Computer Architecture: Parallelism, Scalability, Programmability* (New York: McGraw-Hill, 1993), has been adopted by more than 40 Universities. His previous books have been translated into Japanese, Spanish, and Chinese from the English editions. He has lectured worldwide and provided research and consulting services to US National Science Foundation, AFOSR, ONR, DOT, National Academy of Sciences, MIT Lincoln Laboratory, Caltech JPL, IBM, AT&T, Motorola, and Intel, GMD in Germany, ETL and Fujitsu in Japan, and Academia Sinica and ETRI in China.



Dr. Qiang Huo has been appointed as an Assistant Professor at the Department of Computer Science, The University of Hong Kong as from January 1998.

Dr. Huo received the B.Eng. degree from the University of Science and Technology of China (USTC), Hefei, China, in 1987, the M.Eng. degree from Zhejiang University, Hangzhou, China, in 1989, and the Ph.D. degree from the USTC, in 1994, all in electrical engineering.

From 1986 to 1990, his research work focussed on the hardware design and development for real-time digital signal processing, image processing and computer vision, speech and speaker recognition. From 1991 to 1994, he was with the Department of Computer Science, The University of Hong Kong (HKU), where he completed his Ph.D. thesis on speech recognition under a joint Ph.D. training program between HKU and USTC. From 1995 to 1997, he was with the ATR Interpreting Telecommunications Research Laboratories, Kyoto, Japan, where he engaged in research in speech recognition for the development of the spoken language translation system.

His current major research interests include speech recognition, Chinese character recognition, speaker recognition, computational model for spoken dialogue processing, adaptive signal modeling and processing, general pattern recognition and artificial neural network theory.

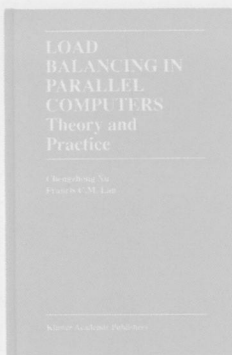
Dr. Huo is a member of the IEEE Signal Processing Society and the Acoustical Society of Japan.



Dr. Christopher C. Yang was born in Hong Kong. He is currently an assistant professor in the Department of Computer Science at the University of Hong Kong. He received his B.S., M.S., and Ph.D. in Electrical Engineering from the University of Arizona, Tucson, Arizona, in 1990, 1992, and 1997, respectively.

From 1992 to 1997, he was a research associate in the Intelligent Systems Laboratory in the Department of Electrical and Computer Engineering. From 1995 to 1997, he was also a research scientist in the Artificial Intelligence Laboratory in the Department of Management Information Systems at the University of Arizona. From 1991 to 1992, he worked in the Multi-dimensional Image Processing Laboratory in the Department of Electrical and Computer Engineering at the University of Arizona as a research assistant.

His current research interests are digital library, Internet agent, visualization, color image processing, constraint network, and computer integrated manufacturing and inspection. He was a program coordinator for the 1997 IEEE International Conference on Systems, Man, and Cybernetics. He is also a program coordinator for the 3rd Asian Conference on Computer Vision and the 1st Asian Workshop on Digital Library in 1998.



Load Balancing in Parallel Computers: Theory and Practice

Chengzhong Xu
Wayne State University, Detroit, MI, USA
and
Francis C.M. Lau
The University of Hong Kong

THE KLUWER INTERNATIONAL SERIES
IN ENGINEERING AND COMPUTER
SCIENCE Volume 381

Load Balancing in Parallel Computers: Theory and Practice is about the essential software technique of load balancing in distributed memory message-passing parallel computers, also called multicomputers. Each processor has its own address space and has to communicate with other processors by message passing. In general, a direct, point-to-point interconnection network is used for the communications. Many commercial parallel computers are of this class, including the Intel Paragon, the Thinking Machine CM-5, and the IBM SP2.

Load Balancing in Parallel Computers: Theory and Practice presents a comprehensive treatment of the subject using rigorous mathematical analyses and practical implementations. The focus is on nearest-neighbor load

balancing methods in which every processor at every step is restricted to balancing its workload with its direct neighbors only. Nearest-neighbor methods are iterative in nature because a global balanced state can be reached through processors' successive local operations. Since nearest-neighbor methods have a relatively relaxed requirement for the spread of local load information across the system, they are flexible in terms of allowing one to control the balancing quality, effective for preserving communication locality, and can be easily scaled in parallel computers with a direct communication network.

Load Balancing in Parallel Computers: Theory and Practice serves as an excellent reference source and may be used as a text for advanced courses on the subject.

Contents

Foreword. Preface. 1. Introduction. 2. A Survey of Nearest-Neighbor Load Balancing Algorithms. 3. The GDE Method. 4. GDE on Tori and Meshes. 5. The Diffusion Method. 6. GDE Versus Diffusion. 7. Termination Detection of Load Balancing. 8. Remapping with the GDE Method. 9. Load Distribution in Combinatorial Optimizations. 10. Conclusions. References. Index.

Kluwer Academic Publishers, Boston
Hardbound, ISBN 0-7923-9819-X
November 1996, 232 pp.
NLG 170.00 / USD 92.50 / GBP 65.75

ACCOMMODATION MATTERS

Dr. Wenping Wang

The renovation of the laboratories of our Department on the 3rd floor of Haking Wong Building has been finished, and the laboratories were handed over to us in the week of Oct. 13. Now the technical staff are working hard to set up computers, hoping to make these laboratories available soon.

The following is the estimated schedule of moving and opening all the laboratories concerned.

Moving Dates

- On October 21, 1997,
- Undergraduate Laboratory II was moved from LG102 to HW312.
- Graduate Laboratory was moved from CB401 to LG102.
- Project Laboratory was moved from CB401 to HW312 temporarily.

Opening Dates

LG102	Graduate Laboratory	Oct 28, 1997
HW312	Computing Laboratory I	Oct 30, 1997
HW305	Network Teaching Laboratory	Nov 10, 1997
HW311	Information System Laboratory	Nov 19, 1997
HW310	Software Engineering and Multimedia Teaching Lab	November 1997
HW335A	Project Laboratory	November 1997
HW335	Computing Laboratory II	December 1997

In addition, the following research laboratories have been shuffled on Nov 13, 1997:

Pattern Recognition and Vision Lab	CB412 to CB401
Advanced Database and Multimedia Lab	CB417 to CB412
Information System Lab	CB414 to CB417

**RESEARCH
GRANTS**

Principal Investigator	Project	Date	Amount Awarded
Research Grants Council			
Competitive Bids Research Grant Awards 1997-98			
Professor Chorkin Chan	Towards robust and flexible continuous Putonghua recognition	1-Sep-97	\$512,600
Dr. Francis Lau	Dynamic Load Balancing using Preemptive Process Migration in a Network of Workstations	1-Sep-97	\$360,000
Dr. T.H. Tse	TESTS: Towards Effective Subdomain Testing Strategies	1-Sep-97	\$435,600
Dr. C.L. Wang	A new MPI-Java interface for distributed multimedia applications	1-Sep-97	\$933,900
Dr. Lester Yee	A Java-based Architecture for Adaptive Information Systems Integration	1-Sep-97	\$435,600
Committee on Research and Conference Grants			
Research Grant Awards 1997-98			
Professor Chorkin Chan	On-line recognition of cursively hand-written Chinese characters	1-Jul-97	\$110,000
Dr. H.W. Chan	Multilingual font service in X window system	1-Jul-97	\$85,000
Dr. T.W. Lam	Dynamic pattern matching	1-Jul-97	\$150,000
Dr. Francis Lau	Theoretical study of interval routing	1-Jul-97	\$110,000
Dr. H.F. Ting	Design and analysis of algorithms in computational biology	1-Jul-97	\$85,000
Dr. Wenping Wang	Metamorphosis of 3D surface models	1-Jul-97	\$95,000
Hung Hing Ying Physical Sciences Research Fund			
Dr. Francis Lau	Meshes with Express Links (MEL)		\$20,000
Leung Kau Kui/Run Run Shaw Research and Teaching Endowment Funds			
Dr. Francis Lau	A software simulator to supplement teaching of machine organization and architecture	12-Dec-96	\$121,000

A sentence deleted from the admission booklet:

"Why go somewhere else for poor teaching if you can join our Department?"

**EQUIPMENT
CORNER**

*Daniel H.F. Hung
Computer Officer*

In 1995, our Department moved from 8/F Knowles Building to 3/F, 4/F and LG/1 of the new Chow Yei Ching Building. Together with the Phase V Consequential Area in Haking Wong Building allocated to our Department in 1996 and 1997, the total floor area tripled from 830 m² to 2,600 m². The number of student laboratories increased from 3 to 9, and in addition, there are 9 research laboratories, each specializing in a different hot research area.

Our Department also emphasize on providing good computing facilities to users. Over 240 Pentium (or better) PCs were acquired since we moved into the Chow Yei Ching Building. There are currently more than 200 workstations and over 400 PCs in the Department. In order to cater for the ever increasing demand for higher network bandwidth, we are upgrading every network outlet from shared 10BaseT to switched 10BaseT port or 100BaseTX port in this semester. This is almost a ten-fold increase in the network bandwidth! Presentation tools, such as PA systems and LCD projectors, are being acquired to facilitate the conduction of workshops, tutorials, lectures and seminars.

CONFERENCE GRANTS

Name	Conference	Venue	Dates
Committee on Research and Conference Grants			
Conference Grants for Teachers 1997-98			
Professor Chorkin Chan	International Conference on Digital Signal Processing '97	Santorini, Greece	July 1-5, 1997
Dr. H.W. Chan	International Conference on Parallel and Distributed Processing Techniques and Applications	Las Vegas, Nevada, USA	June 30 - July 3, 1997
Dr. K.P. Chan	1st International Conference on Information Communications, and Signal Processing (ICICS '97)	Singapore	September 9-12, 1997
Professor Francis Chin	The 13th ACM Symposium on Computational Geometry	Nice, France	June 4-6, 1997
Dr. Francis Lau	Australasian Computer Architecture Conference (ACAC '97) and Computing: the Australasian Theory Symposium (CATS '97)	Sydney, Australia	February 3-4, 1997
Dr. H.F. Ting	Annual ACM Symposium on the Theory of Computing	El Paso, Texas, USA	May 2-5, 1997
Dr. Lester Yee	CODATA Euro-American Workshop Visualization of Information and Data	Paris, France	June 24-25, 1997
Dr. Lester Yee	ACME 7th International Conference	Las Vegas, Nevada, USA	August 10-12, 1997
Committee on Research and Conference Grants			
Conference Grants for Research Students 1997-98			
Mr. Chan Kin Wah	3rd Annual International Computing and Combinatorics Conference	Shanghai, China	August 20-22, 1997
Mr. Lee Chin Hung	21st Annual International Computer Software and Application Conference (COMPSAC '97)	Washington, DC, USA	August 13-15, 1997

PRIZES & AWARDS

Congratulations to the following staff and students for their recent awards:

Dr. T.W. Lam and **Dr. Kevin Pun** for the Teaching Excellence Awards.

Miss Vivian Mak, **Mr. George Mitcheson**, **Mr. Tam Tat Chun**, and **Mr. Yip Chi Lap** for the Outstanding Tutors Awards.

Mr. Wong Pak Kwong for the Epson Foundation Scholarship and the Hung Hing Ying Scholarship.

Mr. Yeung Kwok Ho for the Chan Kai Ming Prize in Engineering and the Hong Kong University Alumni Prize.

Mr. Hui Fung Fan for the Ho Fook Prize in Engineering and the Walter Brown Memorial Prize in Mathematics.

EMPLOYMENT SURVEY

The Employment Survey of Computer Science and Information Systems 1997 Graduates was conducted in October 1997 with 91% (71 out of 78) of graduates responded.

SUMMARY OF 1997 GRADUATES' EMPLOYMENT SITUATION

- 2 graduates joined one of the major computer vendors, IBM and 3 graduates joined the Information Technology Services Department of the Hong Kong Government.
- Over 42% of graduates joined major local companies such as Hongkong Bank, Hang Seng Bank, General Electric, HK Towngas, Cathay Pacific Airways and Hongkong Telecom.
- Some graduates have received more than 3 job offers.
- The average starting salary is around HK\$14,000 per month.
- 3 graduates earned over HK\$22,000 per month.

- P.K. Wong and C. Chan, "A continuous putonghua recognizer", in *Proceedings of International Conference of Digital Signal Processing '97*, pp. 889-892, Santorini (1997).
- P.K. Wong and C. Chan, "An off-line large vocabulary hand-written Chinese character recognizer", in *Proceedings of International Conference on Image Processing*, Santa Barbara (1997) (to appear).
- P.K. Wong and C. Chan, "Word-class bigram statistics language model for a hand-written Chinese character recognizer", in *Proceedings of 3rd Asian Conference on Computer Vision*, Hong Kong (1997) (to appear).
- Y. Xiong and C. Chan, "Contextual modeling of hand written Chinese characters for recognition (I): a comparative study", in *Proceedings of International Conference of Digital Signal Processing '97*, pp. 1099-1102, Santorini (1997).
- Y. Xiong, Q. Huo, and C. Chan, "Contextual modeling of hand written Chinese characters for recognition (II): discriminative training", in *Proceedings of International Conference of Digital Signal Processing '97*, pp. 1095-1098, Santorini (1997).
- D. Deng, K.P. Chan, and Y.L. Yu, "Self-organized hebbian learning of visual receptive fields from image pyramids", *Journal of Circuits and Systems 2*: 8-14 (1997).
- L. Chen, K.P. Chan, T.Q. Nguyen, and Y. Zheng, "A new synthesis procedure for linear-phase paraunitary digital filter banks", in *Proceedings of 1997 IEEE International Symposium on Circuits and Systems*, Hong Kong, Vol. 4, pp. 2377-2380 (1997).
- D.W. Cheung, H.Y. Hwang, A.W. Fu, and A.J. Han, "Efficient rule-based attribute-oriented induction", *Information Science* (to appear).
- D.W. Cheung, C.H. Lee, and V. Ng, "A content-based search engine on medical images for telemedicine", in *Proceedings of 21st Annual International Computer Software and Application Conference (COMPSAC '97)*, Washington, DC (1997).
- D.W. Cheung, V. Ng, and B.W. Tam, "Incremental updates of discovered multi-level association rules", *International Journal of Artificial Intelligence Tools 6* (2): 273-290 (1997).
- K. Hu, D.W. Cheung, S. Xia, "Efficient parallel mining of association rules on shared-memory multi-processor machine", in *Proceedings of IEEE 1st International Conference on Intelligent Processing Systems*, Beijing, China (1997).
- S.D. Lee and D.W. Cheung, "Maintenance of discovered association rules: when to update?", in *Proceedings of 1997 ACM-SIGMOD Workshop on Data Mining and Knowledge Discovery (DMKD '97)*, Tucson, Arizona (1997).
- D. Li, D.W. Cheung, X. Shi, and V. Ng, "Uncertainty reasoning based on cloud models in controllers", *Computers and Mathematics with Applications* (to appear).
- Z. Liu and D.W. Cheung, "Efficient parallel algorithm for dense matrix LU decomposition with pivoting on hypercubes", *Computers and Mathematics with Applications 33* (8) (1997).
- H. Lu, W. Fan, C. Goh, S.E. Madnick and D.W. Cheung, "Discovering and reconciling semantic conflicts: a data mining perspective", in *Proceedings of 7th IFIP 2.6 Working Conference on Data Semantics (DS-7)*, Leysin, Switzerland (1997).
- V. Ng and D.W. Cheung, "Measuring asymmetries of skin lesions", in *Proceedings of 1997 IEEE International Conference On System, Man and Cybernetics (SMC '97)*, Orlando, Florida, USA (1997).
- K. Hu, D.W. Cheung, S. Xia, "Efficient parallel mining of association rules on shared-memory multi-processor machine", in *Proceedings of 1st IEEE International Conference on Intelligent Processing Systems*, Beijing, China (1997).
- D.W. Cheung, B. Kao, and J.W. Lee, "Discovering user access patterns on the World-Wide-Web", *Knowledge Based Systems Journal* (1997) (to appear).
- D.W. Cheung, S.D. Lee, B. Kao, "A general incremental technique for updating discovered association rules", in *Proceedings of 5th International Conference On Database Systems For Advanced Applications (DASFAA '97)*, Melbourne, Australia (1997).
- D.W. Cheung, B. Kao, and J.W. Lee, "Discovering user access patterns on the World-Wide-Web", in *Proceedings of 1st Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD '97)*, Singapore (1997).
- J. Lee, D.W. Cheung, B. Kao, J. Law, and T. Lee, "Intelligent agents for matching information providers and consumers on the World-Wide-Web", in *Proceedings of 30th Hawaii International Conference on Systems Sciences (HICSS '97)*, Wailea, Hawaii (1997).
- K.W. Chan and F.Y.L. Chin, "Optimal multiresolution polygonal approximation", in *Proceedings of 3rd Annual International Computing and Combinatorics Conference (COCOON '97)*, Lecture Notes in Computer Science 1276, Springer-Verlag, pp. 32-41 (1997).
- W.T. Chan, and F.Y.L. Chin, "Algorithms for finding optimal disjoint paths around a rectangle", in *Proceedings of 8th International Symposium on Algorithms and Computation (ISAAC '97)*, Singapore (1997) (to appear).
- W.T. Chan, and F.Y.L. Chin, "Efficient algorithms for finding disjoint paths in grids", in

RECENT
PUBLICATIONS
(CONT'D)

- Proceedings of 8th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA '97)*, New Orleans, Louisiana, pp. 454-463 (1997).
- F.Y.L. Chin** and **C.A. Wang**, "Finding the constrained delaunay triangulation and constrained Voronoi diagram of a simple polygon in linear-time", *SIAM Journal of Computing* (to appear).
- C.K. Poon**, **B.H. Zhu**, and **F.Y.L. Chin**, "A polynomial time solution for labeling a rectilinear map", in *Proceedings of 13th Annual Symposium on Computational Geometry*, Nice, France, pp. 451-453 (1997).
- Y.M. Sun**, **W. Wang** and **F.Y.L. Chin**, "Interpolating polyhedral models using intrinsic shape parameters", *The Journal of Visualization and Computer Animation* 8: 81-96 (1997).
- C.A. Wang**, **F.Y.L. Chin**, and **Y.F. Xu**, "A new subgraph of minimum weight triangulations", *Journal of Combinatorial Optimization* 1: 115-127 (1997).
- Y.M. Sun**, **W. Wang**, and **F.Y.L. Chin**, "Interpolating polyhedral models using intrinsic shape parameters", *Journal of Visualization and Computer Animation* 8: 81-96 (1997).
- K.P. Chow** and **M. Perett**, "Airport counter allocation using constraint logic programming", in *Proceedings of the 3rd International Conference on Practical Application of Constraint Technology*, Lancashire, UK, The Practical Application Company, pp. 107-116 (1997).
- V. Lee**, **K.Y. Lam**, **B. Kao**, "Priority scheduling of transactions in distributed real-time databases", *Journal of Real-Time Systems* (to appear).
- V. Lee**, **K.Y. Lam**, **B. Kao**, "Priority assignment in distributed real-time databases using optimistic concurrency control", *IEE Proceedings: Computers and Digital Techniques* (to appear).
- B. Kao**, **H. Garcia-Molina**, "Deadline assignment in a distributed soft real-time system", *IEEE Transactions on Parallel and Distributed Systems* (to appear).
- A. Chiu**, **B. Kao**, **K.Y. Lam**, "Comparing two-phase locking and optimistic concurrency control protocols in multiprocessor real-time databases", in *Proceedings of 5th IEEE International Workshop on Parallel and Distributed Real-Time Systems*, Geneva, Switzerland (1997).
- Y. Choi** and **T.W. Lam**, "Dynamic suffix trees and two-dimensional texts management", *Information Processing Letters* 61 (4): 213-220 (1997).
- T.W. Lam** and **K.H. Lee**, "An improved scheme for set equality-testing and updating", *Theoretical Computer Science* (to appear).
- K.W. Chong** and **T.W. Lam**, "Approximating biconnectivity in parallel", *Algorithmica* (to appear).
- T.W. Lam** and **F.L. Yue**, "Optimal edge ranking of trees in linear time", in *Proceedings of 9th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA '98)* (1998).
- M.-Y. Kao**, **T.W. Lam**, **T. Przytycka**, **W.K. Sung** and **H.F. Ting**, "General techniques for comparing unrooted evolutionary trees", in *Proceedings of 29th Annual ACM Symposium on Theory of Computing*, pp. 54-65 (1997).
- M.-Y. Kao**, **T.W. Lam**, **W.K. Sung** and **H.F. Ting**, "All-cavity maximum matchings", in *Proceedings of 8th Annual International Symposium on Algorithms and Computation (ISAAC '97)*, Singapore (1997) (to appear).
- M.-Y. Kao**, **T.W. Lam**, **T. Przytycka**, **W.K. Sung**, and **H.F. Ting**, "Efficient algorithms for comparing unrooted evolutionary trees", in *Proceedings of 29th Symposium on Theory of Computing* (to appear).
- C.-Z. Xu** and **F.C.M. Lau**, *Load Balancing in Parallel Computers: Theory and Practice*, Kluwer Academic Publishers, Boston, xv + 210 pp. (1997).
- F.C.M. Lau**, "Open systems technologies", *The Froehlich/Kent Encyclopedia of Telecommunications*, Vol. 14, Marcel Dekker, Inc., New York, pp. 43-69 (1997).
- G. Chen** and **F.C.M. Lau**, "A tight layout of the cube-connected cycles", in *Proceedings of 1997 International Conference on High Performance Computing (HiPC '97)*, India (1997) (to appear).
- G. Chen** and **F.C.M. Lau**, "Shuffle-ring: a new constant-degree network", *Special issue on Interconnection Networks, International Journal of Foundations of Computer Science* (to appear).
- G. Chen** and **F.C.M. Lau**, "Comments on 'A new family of cayley graph interconnection networks of constant degree four'", *IEEE Transactions on Parallel and Distributed Systems* (to appear).
- C.-Z. Xu**, **F.C.M. Lau**, and **R. Diekmann**, "Decentralized Remapping of data parallel applications in distributed memory multiprocessors", *Concurrency: Practice and Experience* (to appear).
- S.S.H. Tse** and **F.C.M. Lau**, "An optimal lower bound for interval routing in general networks", in *Proceedings of 4th International Colloquium on Structural Information and Communication Complexity (SIROCCO '97)*, Ascona, Switzerland (1997).
- S.S.H. Tse** and **F.C.M. Lau**, "Two lower bounds for multi-label interval routing", in *Proceedings of Computing: the Australasian Theory Sympos-*

- sium (CATS '97), *Australia Computer Science Communications* 29(2):36-43 (1997).
- C.K. Au-Yeung, F.C.M. Lau, and S. Cheung, "Efficient computations on cube-mesh: a mesh with express links", in *Computer Architecture '97: Selected Papers of 2nd Australasian Conference*, R. Pose (ed.), Springer, pp. 205-216 (1997).
- G. Chen and F.C.M. Lau, "The wall mesh", in *Computer Architecture '97: Selected Papers of 2nd Australasian Conference*, R. Pose (ed.), Springer, pp. 217-230 (1997).
- S.S.H. Tse and F.C.M. Lau, "A lower bound for interval routing in general networks", *Networks* 29: 49-53 (1997).
- K.H. Pun, "Five years since the software regulations: China's recent developments in software copyright", *International Review of Industrial Property and Copyright Law* 28 (3): 347-360 (1997).
- H.F. Leung, and H.F. Ting, "An optimal algorithm for global termination detection in shared-memory asynchronous multiprocessor systems", *IEEE Transactions on Parallel and Distributed Systems* (to appear).
- T.H. Tse, "Integrating object-oriented and formal specifications: a FOOD approach", in *Proceedings of IT Congress '97, Macau*, pp. 187-192 (1997).
- F.T. Chan, T.Y. Chen, and T.H. Tse, "On the effectiveness of test case allocation schemes in partition testing", *Information and Software Technology* (to appear).
- H.Y. Chen, T.H. Tse, F.T. Chan, and T.Y. Chen, "In black and white: an intergrated approach to class level testing of object-oriented programs", *ACM Transactions on Software Engineering and Methodology* (accepted with minor amendments).
- K. Hwang, C. Wang, and C.L. Wang, "Evaluating MPI collective communication on the SP2, T3D, and paragon multicomputers", in *Proceedings of 3rd International Symposium on High-Performance Computer Architecture (HPCA-3)*, San Antonio, Texas, pp. 106-116 (1997).
- W. Wang, and B. Joe, "Interpolation on quadric surfaces by rational quadratic spline curves", *Computer Aided Geometric Design* 14: 207-230 (1997).
- W. Wang and B. Joe, "Robust computation of rotational minimizing frame for sweep surface modeling", *Computer Aided Geometric Design* 29: 379-391 (1997).
- K. Qin and W. Wang, "A genetic algorithm for the minimum weight triangulation", in *Proceedings of 1997 IEEE International Conference on Evolutionary Computation*, Indianapolis, pp. 541-546 (1997).
- J. Wang, W. Wang, and D. Liu, "An optimal expected-time algorithm for Voronoi diagram of polygonal objects", in *Proceedings of International Conference on Manufacturing Automation*, Hong Kong, pp. 1201-1206 (1997).
- H. Chen, Y. M. Chung, M. Ramsey, C.C. Yang, J. Yen, and P.C. Ma., "Intelligent spider for Internet searching", in *Proceedings of 30th Hawaii International Conference on Systems Sciences (HICSS '97)*, Vol. 4, pp. 242-252 (1997).
- C.C. Yang, M.M. Marefat, and E.J. Johnson, "Entity-based aspect graph: making viewer centered representations more efficient", *Pattern Recognition Letters* (to appear).
- L. Wu, M.M. Marefat, and C.C. Yang, "Purposeful gazing for active vision I: vergence error extraction", *Pattern Recognition* (to appear).
- L. Wu, M.M. Marefat, and C.C. Yang, "Purposeful gazing for active vision II: vergence control", *Pattern Recognition* (to appear).
- H. Chen, Y. Chung, M. Ramsey, and C.C. Yang, "A smart itsy bitsy spider for the Web", *Journal of the American Society for Information Science* (to appear).
- C.C. Yang, M.M. Marefat, and F.W. Ciarallo, "Analysis of errors and planning accuracy on dimensional measurement in active vision inspection", *IEEE Transactions on Robotics and Automation* (to appear).
- H. Chen, Y. Chung, M. Ramsey, and C.C. Yang, "An intelligent personal spider (agent) for dynamic Internet/Intranet searching", *Decision Support Systems* (to appear).
- C.C. Yang and J.J. Rodriguez, "Efficient luminance and saturation processing techniques for color images", *Journal of Visual Communication and Image Representation* (to appear).
- M. Yang, C.C. Yang and Y. Chung, "A natural language processing based Internet agent", in *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics*, Orlando, Florida (1997).
- C.C. Yang and M. Yang, "Constraint networks: a survey", in *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics*, Orlando, Florida (1997).
- F.W. Ciarallo and C.C. Yang, "Optimization of propagation in interval constraint networks for tolerance design", in *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics*, Orlando, Florida (1997).
- C.C. Yang and F.W. Ciarallo, "Minimizing the probabilistic magnitude of active vision errors using genetic algorithm", in *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics*, Orlando, Florida (1997).

RECENT
PUBLICATIONS
(CONT'D)

- C.C. Yang, "Fuzzy Bayesian inference", in *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics*, Orlando, Florida (1997).
- C.C. Yang, M.M. Marefat and F.W. Ciarallo, "Tolerance analysis and synthesis by interval constraint networks", in *Proceedings of IEEE International Conference on Robotics and Automation*, Albuquerque, New Mexico (1997).
- C.C. Yang, K. Crosby, M.M. Marefat, and F.W. Ciarallo, "Camera settings for dimensional inspection using displacement and quantization errors", in *Proceedings of IEEE International Conference on Robotics and Automation*, Albuquerque, New Mexico (1997).
- L. Yee and C. Hsu, "A visualization architecture for enterprise information", in *CODATA Euro-American Workshop on Visualization of Information and Data*, Paris, France (1997).
- F. Leung, S. Archer, and L. Yee, "Visual genome explorer: a comparative visual interface to genome data", *Bio Technique* 22 (6): 1164-1175 (1997).
- L. Yee and W. Cheung, "MIS issues in production management", in *Proceedings of 7th ACME Transactions*, Las Vegas, Nevada (1997).
- L. Yee and C. Hsu, "A virtual reality interface to an enterprise metadatabase", in *Proceedings of 16th International Conference on Conceptual Modeling (ER '97)*, Los Angeles, California (1997) (to appear).
- A. Farhoomand, V. Tuunainen, and L. Yee, "Barriers to global electronic commerce: a cross-country study of Hong Kong and Finland", *Journal of Organizational Computing and Electronic Commerce* (accepted with revisions).
- C.Y.Y. Cheng, and J.C.H. Yen, "VLE: a collaborative learning environment over the Internet", in *Proceedings of 3rd Hong Kong Web Symposium*, Social Sciences Research Center, The University of Hong Kong, pp. 56-74 (1997).
- J.C.H. Yen, F. Szidarovszky, and C.H. Lin, "Control in dynamic bargaining processes", in *Proceedings of International Conference on Management Science and the Economic Development of China*, Hong Kong, Vol. 2, pp. 772-781 (1997).
- J.C.H. Yen, A.K.L. Chung, L.Y.F. To, and M.M. Tseng, "A Web-based project management system for virtual teams: the virtual teaming systems (VTS)", in *Proceedings of 8th International Conference on Comparative Management*, Kaohsiung, Taiwan, pp. 274-282 (1997).
- J.C.H. Yen and C.Y.Y. Cheng, "Virtual learning environment (VLE): a Web-based collaborative learning system", in *Proceedings of 8th International Conference on Comparative Management*, Kaohsiung, Taiwan, pp. 389-396 (1997).
- J.C.H. Yen, "Human agents and artificial agents: an experiment on the Internet", in *Proceedings of 30th Hawaii International Conference on Systems Sciences (HICSS '97)*, Vol. 4, pp. 178-188 (1997).
- J.C.H. Yen with R.O. Briggs, B.A. Reinig, M.S. Shepherd and J.F. Nunamaker, Jr., "Quality as a function of quantity in electronic brainstorming", in *Proceedings of 30th Hawaii International Conference on Systems Sciences (HICSS '97)*, Vol. 2, pp. 94-103 (1997).

A sentence deleted from the Minutes of the Staff-Student Consultative Meeting:
"If you think your teacher is lousy, you should see the Head of Department."

SNAPSHOTS OF
THE RETREAT

A retreat of the Department was held in February 1997 at the Aberdeen Mariner's Club, chaired by the Dean of Engineering. Important issues such as academic directions, research directions, curriculum reform, and departmental management were hotly discussed. The most significant corollary of the retreat was the change of name of the department and the degree offered. (See pages 1-2.) To lead the Department into a brainstorming mood, the Dean also invited members to play a few starter games, resulting in bridges made of lolly sticks and rubber bands, possibly symbolizing the integration of CS and IS. The retreat was hailed to be such a success that a second one will be held at the same place in February 1998.



MORE NEWS

We would like to congratulate:

- **Professor Francis Chin** and **Dr. Bethany Chan** for the birth of their daughter in February 1997, immediately after the retreat.
- **Dr C.F. Chong** for the birth of his daughter in May 1997.

Congratulations also to **Mr. Yu Chi Wang** for winning the overall championship in the 3C Singing Contest held on October 29, 1997, and to Postgraduates and Staff for winning the team championship.

Dr T.Y. Chen was invited to visit The Software Engineering Group as a Visiting Senior Lecturer in July, October, and December 1997.

Professor Huoyan Chen was re-appointed as a Research Associate with The Software Engineering Group from December 1997 to November 1998.

Dr T.H. Tse has been invited to serve on the programme committee of the 21st IEEE Annual International Computer Software and Applications Conference (COMPSAC '97) held in Washington DC in August 1997 and the 24th International Conference on Technology of Object-Oriented Languages and Systems (TOOLS Asia '97) held in Beijing in September 1997. He has been re-appointed by the Governor as a Member of the Committee on Information Technology Training of the Vocational Training Council from March to September 1997, and by the Chief Executive of the SAR as a Member of the same committee from October to December 1997. He has also been re-appointed by the Governor as an Adjudicator of the Immigration Tribunal for two years from March 1997.

A sentence deleted from a Ph.D. thesis in object-oriented methodology:

"The richness of our super model is due to inheritance in a formal class structure, without which we could not have made a significance contribution to the professional community."

THOUGHTS OF THE NEW SCHOOL TERM

*Teresa R.F. Chang
MSc(CS) Student*

Time passes so fast, the new school term starts again. I am so glad to see that many of my classmates this year were my Networks students. Well, it is not so surprising, as graduate studies may take many years to finish, and hence, quite often TA's and undergraduate students can become classmates in graduate classes.

This year, my status is different, a full time M.Sc. instead of a M.Phil. -- just changed it this August. Nevertheless, I still continue my research topic with the same supervisor. It is nice though, to experience two different programs; but it is not so good to feel that there is a different treatment for students in these two programs. One example is, it seems that an M.Sc. student is not defined as a postgraduate. According to one research student in this Department, he thinks that M.Sc. is course-based and is therefore like an undergraduate! [*This is only the personal view of that particular research student and hence Teresa need not take it too seriously. -- Editor*] The good news for full time M.Sc. students is that they can finish all the work in one year!

My background was from Computer Engineering of the University of Toronto. At Toronto, for most graduate courses, it is up to the instructor to decide on the exam time and date. At HKU, the time is decided by the University, although the instructor may make suggestions. At HKU, it seems that everything will eventually need to go through the Faculty Board for decision; while at Toronto, one could just discuss individual cases with the Dean.

This year probably would be my final year of "study" with HKU. After M.Sc. study, I might further my study back in Canada. Although I have only been in this University since last year, I could tell that HKU has been having quite a lot of changes, especially, a lot more Mainland China students coming in. An interesting phenomenon is that the CS Department even needs to have an extra demonstrator head dedicated for Mainland China demonstrators this year.

A good improvement is that there are some lockers provided for M.Sc. (Computer Science) students starting in 1997. They are situated near the 4th floor stair area of the CYC Building. It is first-come-first-served. However, I guess it may be better if the allocation scheme could be more flexible. [*Although the policy is stated as first-come-first-served, we have managed to provide lockers for all M.Sc. (Computer Science) students so far. -- Editor*]



X45542302

