BRUNO CÉSAR DOS SANTOS OLIVEIRA

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National University of Singapore

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PERSONAL INFORMATION

Year of birth: 1979   **Citizenship:** Portuguese

Town of birth: Viana do Castelo, Portugal   **Marital Status:** Single

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RESEARCH INTERESTS

Programming Languages, Software Engineering, Modularity, Program Analysis, Functional Programming, Object-Oriented Programming, Aspect-Oriented Programming and Concurrency.

EDUCATION

University of Oxford, Oxford, UK   October 2003 - December 2007

Doctor of Philosophy in Computer Science
- Thesis: Genericity, extensibility and type-safety in the Visitor pattern.

University of Minho, Braga, Portugal   1997 - 2002

Licenciatura (Master's equivalent 5-year degree) in Computer Science and Systems Engineering
- Specialization on Information Technologies and Computer Networks.

OTHER QUALIFICATIONS

Saïd Business School, University of Oxford, Oxford, UK   2006

Certificate on Building a Business
- with focus on IP, finance reports, product development, negotiations and fund raising.

RESEARCH EXPERIENCE

National University of Singapore, Singapore   January 2012 - present

Senior Research Fellow supported by Singapore Ministry of Education research grant MOE2010-T2-2-073.

The University of Texas at Austin, United States   September 2011 - December 2011

Visiting Researcher supported by the UT Austin-Portugal collaboration program.

ROSAEC Center, Seoul National University, South Korea   August 2009 - August 2011

Research Professor supported by the Engineering Research Center of Excellence Program of Korea Ministry of Education, Science and Technology (MEST) / Korea Science and Engineering Foundation (KOSEF) grants number R11-2008-007-01002-0 and 2010-0022-061.

Oxford University Computing Laboratory, Oxford, UK   November 2006 - July 2009

Post-doctoral research assistant on the EPSRC-funded *Generic and Indexed Programming* (GIP) project. The principal investigator was Prof. Jeremy Gibbons.

Oxford University Computing Laboratory, Oxford, UK   October 2003 - September 2006

Doctoral student on the EPSRC-funded *Datatype Generic Programming* (DGP) project. The principal investigator was Prof. Jeremy Gibbons and the final evaluation of the project was rated excellent by EPSRC.

OTHER PROFESSIONAL EXPERIENCE

IBM Silicon Valley Laboratory, San Jose, CA, USA   June 2002 - April 2003

Technical Co-op on the *IBM DB2 Everyplace Performance and Client team*. My responsibilities included the development of a tool to automate the process of testing and collecting performance results.

Sidereus SA, Porto, Portugal   January 2002 - June 2002

Internship working on the development of a *fuzzy query engine for databases*. My responsibilities included the creation of a formal specification in VDM and the development of an implementation in Microsoft .NET.

THESES	1. Bruno C. d. S. Oliveira. *Genericity, extensibility and type-safety in the* VISITOR *pattern.* **D.Phil. (Ph.D.) Thesis, University of Oxford, 2007**. The external examiner was *Professor Martin Odersky* from the Ecole Polytechnique Fédérale de Lausanne (EPFL) in Switzerland and the internal examiner was *Dr. Ralf Hinze.*
EDITORIAL WORK	1. Bruno C. d. S. Oliveira and Marcin Zalewski. **Proceedings of the 6th ACM SIGPLAN ICFP Workshop on Generic Programming**, September 2010.
REFEREED JOURNAL ARTICLES	1. <u>Bruno C. d. S. Oliveira</u>, Tom Schrijvers and William R. Cook. *MRI: Modular Reasoning about Interference in Incremental Programming.* In **Journal of Functional Programming**, Vol. 22, issue 06, pages 797-852. November 2012.
	2. <u>Bruno C. d. S. Oliveira</u> and Jeremy Gibbons. *Scala for Generic Programmers.* In **Journal of Functional Programming** Vol. 20, pages 303-352. October 2010.
	3. Jeremy Gibbons and <u>Bruno C. d. S. Oliveira</u>. *The Essence of the* ITERATOR *Pattern.* In **Journal of Functional Programming** Vol. 19, pages 377-402. July 2009.
REFEREED CONFERENCE PAPERS (FULL PAPERS)	1. <u>Bruno C. d. S. Oliveira</u>, Tijs van der Storm, Alex Loh and William R. Cook. *Feature-Oriented Programming with Object Algebras.* Accepted at **Proceedings of the 27th European Conference on Object-Oriented Programming (ECOOP 2013)**, 25 pages.
	2. Marcel Böhme, <u>Bruno C. d. S. Oliveira</u> and Abhik Roychoudhury. *Partition-based Regression Verification.* **To appear at the 35th ACM/IEEE International Conference on Software Engineering (ICSE 2013)**, 10 pages.
	3. Benjamin Delaware, <u>Bruno C. d. S. Oliveira</u> and Tom Schrijvers. *Meta-Theory à la Carte.* **Proceedings of the 40th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2013)**, pages 207-218, January 2013.
	4. <u>Bruno C. d. S. Oliveira</u> and William R. Cook. *Functional Programming with Structured Graphs.* In **Proceedings of the 17th ACM SIGPLAN International Conference on Functional Programming (ICFP 2012)**, pages 77-88, September 2012.
	5. <u>Bruno C. d. S. Oliveira</u> and William R. Cook. *Extensibility for the Masses: Practical Extensibility with Object Algebras.* In **Proceedings of the 26th European Conference on Object-Oriented Programming (ECOOP 2012)**, pages 2-27, June 2012. **Note:** This paper won the **Best Paper Award**.
	6. <u>Bruno C. d. S. Oliveira</u>, Tom Schrijvers, Wontae Choi, Wonchan Lee and Kwangkeun Yi. *The Implicit Calculus: A New Foundation for Generic Programming.* In **Proceedings of the 33rd Conference on Programming Language Design and Implementation (PLDI 2012)**, pages 35-44, June 2012.
	7. Gyesik Lee, <u>Bruno C. d. S. Oliveira</u>, Sungkeun Cho and Kwangkeun Yi. *GMeta: A Generic Formal Metatheory Framework for First-Order Representations.* In **Proceedings of the 22nd European Symposium on Programming (ESOP 2012)**, pages 436-455, March 2012.
	8. Tom Schrijvers and <u>Bruno C. d. S. Oliveira</u>. *Monads, Zippers and Views: Virtualizing the Monad Stack.* In **Proceedings of the 16th ACM SIGPLAN International Conference on Functional Programming (ICFP 2011)**, pages 32-44, September 2011.
	9. <u>Bruno C. d. S. Oliveira</u>, Adriaan Moors and Martin Odersky. *Type Classes as Objects and Implicits.* In **Proceedings of the 25th ACM International Conference on Object Oriented Programming, Systems, Languages and Applications (OOPSLA 2010)**, pages 341-360, October 2010.
	10. <u>Bruno C. d. S. Oliveira</u>, Tom Schrijvers and William R. Cook. *EffectiveAdvice: Disciplined Advice with Explicit Effects.* In **ACM SIG Proceedings of the 9th International Conference on Aspect-Oriented Software Development (AOSD 2010),** pages 109-120, March 2010.

11. <u>Bruno C. d. S. Oliveira</u>. *Modular Visitor Components: A Practical Solution to the Expression Families Problem.* In **Lecture Notes in Computer Science, Proceedings of the 23rd European Conference on Object-Oriented Programming (ECOOP 2009)**, volume 5653, pages 269-293, July 2009.

12. <u>Bruno C. d. S. Oliveira</u>, Meng Wang and Jeremy Gibbons. *The Visitor Pattern as a Reusable, Generic, Type-Safe Component.* In **Proceedings of the 23rd Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2008)**, pages 439-456, October 2008.

13. Alexey Rodriguez, Johan Jeuring, Patrik Jansson, Alex Gerdes, Oleg Kiselyov and <u>Bruno C. d. S. Oliveira</u>. *Comparing Libraries For Generic Programming In Haskell.* In **Proceedings of the ACM SIGPLAN Haskell Symposium**, pages 111-122, September 2008.

14. Rui Zhang, <u>Bruno C. d. S. Oliveira</u>, Alan Bivens and Steve McKeever. *Scalable Problem Localization for Distributed Systems: Principles and Practices.* In the **ACM International Conference Proceedings of the Second International Conference on Scalable Information Systems (Infoscale.07)**, June 2007.

15. <u>Bruno C. d. S. Oliveira</u>, Ralf Hinze and Andres Löh. *Extensible and Modular Generics for the Masses.* In **Postproceedings of the 7th Symposium on Trends in Functional Programming (TFP 2006)**, pages 199-216, April 2006.
    Note: This paper won the **Best Student Paper Award**.

16. Ralf Hinze, Andres Löh, and <u>Bruno C. d. S. Oliveira</u>. *"Scrap Your Boilerplate" Reloaded.* In **Lecture Notes in Computer Science, Proceedings of the 8th International Symposium on Functional and Logic Programming (FLOPS 2006)**, volume 3945, pages 13-29, April 2006.

REFEREED WORKSHOP PAPERS (FULL PAPERS)

1. <u>Bruno C. d. S. Oliveira</u> and Andres Löh. *Abstract Syntax Graphs for Domain Specific Languages.* **Proceedings of the 22nd ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation (PEPM 2013)**, pages 87-96, January 2013.

2. Meng Wang, <u>Bruno C. d. S. Oliveira</u>. *What does AOP mean for Functional Programmers?.* In **Proceedings of the 5th ACM SIGPLAN Workshop on Generic Programming (WGP 2009)**, pages 37-48, August 2009.

3. <u>Bruno C. d. S. Oliveira</u>, Jeremy Gibbons. *Scala for Generic Programmers.* In **Proceedings of the 4th ACM SIGPLAN Workshop on Generic Programming (WGP 2008)**, pages 25-36, September 2008.

4. Jeremy Gibbons and <u>Bruno C. d. S. Oliveira</u>. *The Essence of the* ITERATOR *Pattern.* In **Proceedings of the Workshop on Mathematically Structured Functional Programming (MSFP 2006)**, July 2006.

5. <u>Bruno C. d. S. Oliveira</u> and Jeremy Gibbons. *TypeCase: A Design Pattern for Type-Indexed Functions.* In **Proceedings of the ACM SIGPLAN Haskell Workshop (HW'05)**, pages 98-109, September 2005.

OTHER PAPERS

1. Tom Schrijvers and <u>Bruno C. d. S. Oliveira</u>. *Rational Term Equality, Functionally.* In **24th Draft Proceedings of the Symposium on Implementation of Functional Languages (IFL 2012)**. August 2012.

2. Tom Schrijvers and <u>Bruno C. d. S. Oliveira</u>. *Modular Components with Monadic Effects.* In **Draft Proceedings of the 22nd Symposium on Implementation of Functional Languages (IFL 2010)**. September 2010.

3. Jeremy Gibbons, Meng Wang and <u>Bruno C. d. S. Oliveira</u>. *Generic and Indexed Programming.* In **Proceedings of the 8th Symposium on Trends in Functional Programming (TFP 2007)**, April 2007.

Selected Talks and Presentations	1. Article presentations at **HW'05**, **TFP 2006**, **MSFP 2006**, **OOPSLA 2008**, **ECOOP 2009**, **SPLASH/OOPSLA 2010**, **ECOOP 2012**, **PLDI 2012** and **ICFP 2012**.

1. Article presentations at **HW'05**, **TFP 2006**, **MSFP 2006**, **OOPSLA 2008**, **ECOOP 2009**, **SPLASH/OOPSLA 2010**, **ECOOP 2012**, **PLDI 2012** and **ICFP 2012**.

2. *Monads, Zippers and Views: Virtualizing the Monad Stack.* Presentation at the **66th IFIP Working Group 2.1 Meeting**, Atlantic City, New Jersey, US, September 2010.

3. *EffectiveAdvice Disciplined Advice with Explicit Effects.* Presentation at the **65th IFIP Working Group 2.1 Meeting**, Braga, Portugal, January 2010.

4. *Genericity, extensibility and type-safety in the VISITOR pattern: An overview.* Presentation at the **63rd IFIP Working Group 2.1 Meeting**, Kyoto, Japan, September 2007.

Memberships
- Member of the **IFIP Working Group 2.1 (Algorithmic Languages and Calculi)**.
- Steering committee member of the **Haskell Symposium**.
- Steering committee member of the **Workshop on Generic Programming**.

Chairing and Program Committees
- *PC member* - **28th ACM International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2013)**.
- *PC member* - **Foundations of Aspect Oriented Languages (FOAL 2013)**.
- *PC member* - **24th Symposium on Implementation and Application of Functional Languages (IFL 2012)**.
- *PC member* - **11th ACM International Conference on Aspect-Oriented Software Development (AOSD 2012)**.
- *PC member* - **Foundations of Aspect Oriented Languages (FOAL 2012)**.
- *PC member* - **26th ACM International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2011)**.
- *PC member* - **4th Haskell Symposium (HS 2011)**.
- *PC member* - **10th International Conference on Generative Programming and Component Engineering (GPCE 2011)**.
- *PC member* - **4th International Conference on Software Language Engineering (SLE 2011)**.
- *PC member* - **Foundations of Aspect Oriented Languages (FOAL 2011)**.
- *Co-chair* - **6th ACM Workshop on Generic Programming 2010**.
- *PC member* - **9th International Conference on Generative Programming and Component Engineering (GPCE 2010)**.

PhD Examination Committees

I have been an external examiner for:
- **Embedded Programming Languages And Their Representation**, *Christian Hofer*, University of Aarhus, Denmark (2010)
  Note: Christian Hofer's advisors were Prof. Olivier Danvy and Prof. Klaus Ostermann.

Reviewing

I have done reviewing for several journals, conferences and workshops, including:

Journals: **TOPLAS**; **Software Practice & Experience**; **Higher-Order and Symbolic Computation Journal**.

Conferences and Workshops: **POPL 2013**; **ICFP 2006, 2007, 2008 and 2011**; **OOPSLA 2010**; **ESOP 2011**; **MPC 2004, 2006 and 2008**; **ICTAC 2011**; **APLAS 2009**; **CPP 2011**; **PEPM 2010**; **HS 2006, 2009**; **WGP 2006, 2009**.

Selected Honors and Awards	**Best Paper Award**, *European Conference on Object-Oriented Programming*	2012

Best Paper Award, *European Conference on Object-Oriented Programming* 2012

Best paper award at ECOOP 2012 with the paper entitled *"Extensibility for the Masses: Practical Extensibility with Object Algebras"*.

Best Student Paper Award, *Trends in Functional Programming* 2006

Best student paper award at TFP 2006 with the paper entitled *"Extensible and Modular Generics for the Masses"*.

University of Minho Merit Award 1998-2001

I won this award for three times in the following academic years: **1998-1999**, **1999-2000** and **2000-2001**.

Teaching Experience

Seoul National University, Seoul, South Korea January 2010 - July 2010

Co-supervision of master students at the ROSAEC center.

Oxford University Computing Laboratory, Oxford, UK November 2006 - July 2009

Co-supervision of a PhD student working on the Generic and Indexed Programming project.

Oxford University Software Engineering Programme, Oxford, UK October 2003 - July 2009

The Software Engineering Programme is a part-time professional Master's programme at the University of Oxford. I have demonstrated courses in **Functional Programming** and **Design Patterns** on several occasions.

Oxford University Computing Laboratory, Oxford, UK October 2005 - December 2005

I have demonstrated and was appointed as a tutor for the **Functional Programming** undergraduate course.

Grants and Scholarships

Korean Science and Engineering Foundation (KOSEF) Grant 2010-2013

I co-authored and was a **Principal Investigator** in the KOSEF grant number 2010-0022-061 on the "Development of a Verification Tool for C Programs using Separation Logic". This grant started in October 2010 and will last for 3 years. The total value for the grant is **600,000,000 Korean won (roughly $540,000 US dollars)**.

Engineering and Phisical Sciences Research Council (EPSRC) Grant 2006-2010

I **co-authored the proposal** for the *Generic and Indexed Programming* project funded by EPSRC. Prof. Jeremy Gibbons was the principal investigator and the grant covered my postdoc salary, a D.Phil. student scholarship, and traveling and equipment costs. This was a 3.5 year grant lasting from November 2006 to April 2010. The total value of the grant was **£343,961**.

EPSRC Scholarship October 2003 - September 2006

I was **selected and awarded with an EPSRC DPhil student scholarship** for the *Datatype-Generic Programming* project.

Government Scholarship for Undergraduate Studies October 1997 - September 2001

I was **awarded with a Portuguese government scholarship** throughout my undergraduate studies.

Language Skills

Portuguese: Native Fluency	**English:** (Close to native) Fluency
Spanish: Fluency	**French and Italian:** Basic Knowledge

Activities and Interests

Oxford University Portuguese Society: Served as *accountant and web designer* in 2005-2006.

Reading: I enjoy reading science fiction, historic novels and popular science books. I like reading scientific and business magazines such as "Scientific America", "Fortune", "Computer World".

Sports: Football, road cycling, snowboard, tennis, volleyball and chess.