

---

## JIRÍ ŠIMŠA

Computer Science Department, Carnegie Mellon University, Pittsburgh, PA 15213

Office: (412)-268-7661 ◊ [jsimsa@cs.cmu.edu](mailto:jsimsa@cs.cmu.edu) ◊ Cellular: (412)-897-4542

---

### Education

- *Ph.D. in Computer Science*, Computer Science Department, Carnegie Mellon University  
Advisors: Randy Bryant and Garth Gibson.  
Degree expected in May 2013.
- *Masters in Computer Science*, Informatics, Masaryk University  
Graduated summa cum laude in June 2006.
- *Bachelors in Computer Science*, Informatics, Masaryk University  
Graduated summa cum laude in June 2004.
- *Summer School on Engineering Methods and Tools for Software Safety and Security*. August, 2008
- *Summer School on Foundations of Security Analysis and Design*. September, 2004
- *European Summer School in Logic, Language and Information*. August, 2003

### Awards and Scholarships

- *Microsoft Research and Carnegie Mellon University Computational Thinking Program*, 2011  
Awarded funding to carry out research on systematic testing of concurrent systems.
- *Fulbright Scholar Program*, 2007  
Awardee of the 1st International Fulbright Science and Technology award.  
3-year support to attend a Ph.D. program in the United States.
- *Rector's Prize*, 2006  
Awarded for outstanding study and research results at Masaryk University.
- *Dean's Prize for Masters Students*, 2006  
Awarded for outstanding study results at Faculty of Informatics of Masaryk University.
- *Dean's Prize for Undergraduate Students*, 2004  
Awarded for outstanding study results at Faculty of Informatics of Masaryk University.

### Research Visits and Internships

- *Google, Mountain View, USA*  
– Summer 2011 – 3 month internship, Host: Robert Kennedy
- *Yahoo, Santa Clara, USA*  
– February – 2 week research visit, Host: Russell Sears
- *Argonne National Laboratory, Argonne, USA*  
– Summer 2010 – 6 week research visit, Host: Robert B. Ross
- *Microsoft Research Cambridge, Cambridge, England*  
– Spring 2009 – 3 month internship, Host: Byron Cook

- *Max Planck Institute for Software Systems, Saarbrücken, Germany*  
– January 2009 – 1 week visit, Host: Andrey Rybalchenko
- *Aalborg University, Aalborg, Denmark*  
– Fall 2005 – 3 month internship, Host: Kim G. Larsen

## Conference Publications

- Jiří Šimša, Satnam Singh. Designing Hardware with Dynamic Memory Abstraction. Appeared in *18th Int. Symposium on Field-Programmable Gate Arrays (FPGA '10)*, Monterey, 2010.
- Byron Cook, Ashutosh Gupta, Stephen Magill, Andrey Rybalchenko, Jiří Šimša, Satnam Singh, and Viktor Vafeiadis. Finding Heap-bounds for Hardware Synthesis. Appeared in *9th Conference on Formal Methods in Computer Aided Design (FMCAD '09)*, Austin, 2009.
- Jennifer Tam, Jiří Šimša, Sean Hyde, and Luis Von Ahn. Breaking audio captchas. Appeared in *22nd Annual Conference on Neural Information Processing Systems (NIPS '08)*, Vancouver, 2008.
- David Šafránek and Jiří Šimša. VDC: A Visual Formalism for Specification of Heterogeneous Software Architectures Appeared in *31st Annual Conference on Current Trends in Theory and Practice of Informatics (SOFSEM '05)*, Liptovsky Jan, 2005.
- Luboš Brim, Ivana Černá, Pavel Moravec, and Jiří Šimša. Accepting Predecessors Are Better Than Back Edges In Distributed LTL Model-Checking. Appeared in *5th Conference on Formal Methods in Computer Aided Design (FMCAD '04)*, Austin, 2004.

## Workshop Publications

- Jiří Šimša, Garth Gibson, Randy Bryant. dBug: Systematic Testing of Unmodified Distributed and Multi-threaded Systems. Appeared in *18th Int. Workshop on Model Checking of Software (SPIN '11)*, Snowbird, 2011.
- Jiří Šimša, Garth Gibson, Randy Bryant. dBug: Systematic Evaluation of Distributed Systems. Appeared in *5th Int. Workshop on Systems Software Verification (SSV '10)*, Vancouver, 2010.
- Milo Polte, Jiří Šimša, and Garth Gibson. Enabling Enterprise Solid State Disks Performance Appeared in *1st Workshop on Integrating Solid-state Memory into the Storage Hierarchy (WISH '09)*, Washington D.C., 2009.
- Milo Polte, Jiří Šimša, Wittawat Tantisirirot, and Garth Gibson. Fast Log-based Concurrent Writing of Checkpoints. Appeared in *4th Petascale Data Storage Workshop (PDSW '09)*, Austin, 2009.
- Milo Polte, Jiří Šimša, and Garth Gibson. Comparing Performance of Solid State Device and Mechanical Disks. Appeared in *4th Petascale Data Storage Workshop (PDSW '09)*, Austin, 2009.
- Luboš Brim, Ivana Černá, Pavel Moravec, and Jiří Šimša. How to Order Vertices for Distributed LTL Model-Checking Based on Accepting Predecessors Appeared in *4th Int. Workshop on Parallel and Distributed Methods in verification (PDMC '05)*, Munich, 2005.
- Luboš Brim, Ivana Černá, Pavel Moravec, and Jiří Šimša. Distributed Partial Order Reduction of State Spaces Appeared in *3rd Int. Workshop on Parallel and Distributed Methods in Verification (PDMC '04)*, London, 2004.

## Non-refereed Publications

- Jiří Šimša. Systematic and Scalable Testing of Concurrent Programs, *Carnegie Mellon University Thesis Proposal*, Pittsburgh, 2011. Available from: <http://www.cs.cmu.edu/~jsimsa/proposal.pdf>

## Academic Service

- *Carnegie Mellon University, Pittsburgh, USA*
  - Fall '09 – Algorithms, teaching assistant to Avrim Blum
  - Fall '08 – Introduction to Computer Systems, teaching assistant to Randy Bryant and Greg Ganger
- *Masaryk University, Brno, Czech Republic*
  - Spring '07 – Algorithm Design II, teaching assistant to Ivana Černá
  - Fall '06 – Algorithms for Hard Problems, teaching assistant to Ivana Černá
  - Fall '06, '05, '04 – Automata and Grammars, teaching assistant to Ivana Černá
  - Spring '05 – Formal Languages and Automata I, teaching assistant to Mojmír Křetínský
  - Fall '04 – Computability and Complexity, teaching assistant to Luboš Brim

## Selected Classes

- Advanced OS and Distributed Systems with David Andersen, Grade: A
- Graduate Algorithms with Gary Miller, Grade: A
- Machine Learning with Carlos Guestrin, Grade: A+
- Model Checking with Edmund Clarke, Grade: A
- Proving Program Termination with Byron Cook, Grade: A
- Storage Systems with Garth Gibson and Greg Ganger, Grade: A
- Type Systems with Karl Crary, Grade: A

## Work Experience

- February 2009 – April 2009  
*Microsoft Research Cambridge, UK* – research intern  
During my internship at MSR Cambridge I worked with Byron Cook and Satnam Singh. My research project focused on hardware synthesis of C programs that use dynamic data structures. I created a research prototype in OCaml capable of synthesizing VHDL and Bluespec designs from C programs. The research project lead to two conference publications.
- September 2007 – present  
*Parallel Data Lab, Carnegie Mellon University, USA* – graduate researcher  
As a member of PDL I have been working on performance evaluation of solid state disk and, more recently, applying formal methods to analysis of multi-threaded and distributed systems.
- September 2006 – May 2007  
*Grisoft, Czech Republic* – partner development specialist  
While working for Grisoft, I was part of a team that interacted with business partners and distributors. This team facilitated the communication between the business partners and the rest of the company. I was also responsible for organizing social events for visitors.
- Summer 2005  
*Software Development Europe, Czech Republic* – software developer  
At the Software Development Europe company, I contributed to the development and maintenance of a C++ application used for monitoring of telephone networks.

- February 2003 – August 2007

*Laboratory of Parallel and Distributed Systems, Masaryk University, Czech Republic* – junior researcher

As a member of the ParaDiSe laboratory I carried out research in explicit state space model checking and participated in development of a distributed verification engine.

## References

- Randy Bryant
  - Dean of School of Computer Science, Carnegie Mellon University, [randy.bryant@cs.cmu.edu](mailto:randy.bryant@cs.cmu.edu)
- Byron Cook
  - Senior Researcher, Microsoft Research Cambridge, [bycook@microsoft.com](mailto:bycook@microsoft.com)
- Ivana Černá
  - Professor of Computer Science, Vice-Rector for IT, Masaryk University, [cerna@fi.muni.cz](mailto:cerna@fi.muni.cz)
- Garth Gibson
  - Professor of Computer Science, Carnegie Mellon University, [garth.gibson@cs.cmu.edu](mailto:garth.gibson@cs.cmu.edu)
- Kim G. Larsen
  - Professor of Computer Science, Aalborg University, [kgl@cs.auc.dk](mailto:kgl@cs.auc.dk)
- Satnam Singh
  - Senior Researcher, Microsoft Research Cambridge, [satnams@microsoft.com](mailto:satnams@microsoft.com)

On May 24, 2011 in Pittsburgh, USA

Jiří Šimša