Ioan Stefanovici

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Education

University of Toronto **2012 – Present**
Ph.D. Student, Computer Science
Advisor: Bianca Schroeder
Research Interests: I'm broadly interested in large-scale computer system design and implementation. My work so far has focused on improving system reliability, controllability, and programmability, as well as reducing the impact of large-scale systems on the environment.

University of Toronto **2010 – 2012**
M.Sc., Computer Science
Advisor: Bianca Schroeder
Thesis: Improving the Reliability and Cost-Effectiveness of Data Centers

University of Toronto **2006 – 2010**
H.B.Sc with High Distinction
Computer Science: Information Security Specialist, Mathematics Minor

Publications

Refereed Publications

- **sRoute: Treating the Storage Stack Like a Network**
  Ioan Stefanovici, Bianca Schroeder, Greg O'Shea, Eno Thereska
  14th Usenix Conference on File Systems and Storage Technologies (FAST 2016)
- **Software-Defined Caching: Managing Caches in Multi-Tenant Data Centers**
  Ioan Stefanovici, Eno Thereska, Greg O'Shea, Bianca Schroeder, Hitesh Ballani, Thomas Karagiannis, Antony Rowstron, Tom Talpey
  ACM Symposium on Cloud Computing (SoCC 2015)
- **Temperature Management in Data Centers: Why Some (Might) Like it Hot**
  Nosayba El-Sayed, Ioan Stefanovici, George Amvrosiadis, Andy Hwang, Bianca Schroeder
  Sigmetrics/Performance 2012 **Best Paper Award**
- **Cosmic Rays Don't Strike Twice: Understanding the Nature of DRAM Errors and the Implications for System Design**
  Andy Hwang, Ioan Stefanovici, Bianca Schroeder
  The 7th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2012)

Non-Refereed Publications

- **Battling Borked Bits**
  Ioan Stefanovici, Andy Hwang, Bianca Schroeder
  IEEE Spectrum, December 2015
- **Temperature Management in Datacenters: Cranking Up the Thermostat Without Feeling the Heat**
  Nosayba El-Sayed, Ioan Stefanovici, George Amvrosiadis, Andy Hwang, Bianca Schroeder
  USENIX ;login:, February 2013, Volume 38, Number 1
- OS/161 reference materials and assignments included in: *William Stallings*, **Operating Systems: Internals and Design Principles** (7th ed.), New York: Prentice Hall (2011)

Employment History

Microsoft Research (Cambridge, Cambridgeshire, United Kingdom) **Jan. 2014 – Apr. 2014**
Position: Research Intern **May. 2013 – Aug. 2013**

- As part of the "Predictable Data Centers" project, researched and prototyped software-defined storage (SDS) architectures, that open up the storage stack, making it more programmable, and controllable.

IBM Research T.J. Watson (Hawthorne, NY, United States) **Jul. 2012 – Oct. 2012**
Position: Research Summer Intern - Cloud Computing, Virtualization and Data Center Management

- Researched and prototyped a customer-facing performance and management analytic for cloud environments, offering predictive and "what if?"-type exploration of application performance characteristics.

Google (New York, NY, United States) **May 2009 – Aug. 2009**
Position: Software Engineer Intern

- Designed and implemented services that are available to the entire Google user base for the first public release of Google Apps Script, which enables users to leverage various Google services to automate tasks and increase workflow productivity.
- Services allowed users to programmatically interact with Google Finance, Google Spreadsheets, and Google Contacts via JavaScript.
- Improved the security analyzer used by the Google Apps Script server to perform static analysis of JavaScript code as a means of generating a list of security requirements that require user validation.

Microsoft (Redmond, WA, United States) **Jun. 2008 – Aug. 2008**
Position: Software Design Engineer in Testing Intern

- Created a static code analysis taint-tracking tool used by the **C**ommon **L**anguage **R**untime (.NET runtime engine) team on the Silverlight and 4.0 version releases of the engine, focusing primarily on its new security model.
- The tool was designed to track the flow of potentially-malicious user input from the public surface of an API into critical regions of managed assemblies. It was used by the CLR team to prioritize security-related fuzz-testing targets.
- Created fuzz-test scenarios, and made recommendations concerning the highest-priority public surface areas of mscorlib.dll that required security-related fuzz-testing.

Conference Talks

- **FAST 2016** **February 2016**
  "sRoute: Treating the Storage Stack Like a Network"
- **SoCC 2015** **August 2015**
  "Software-Defined Caching: Managing Caches in Multi-Tenant Data Centers"
- **ASPLOS 2012** **March 2012**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"

Invited Talks

- **Microsoft Research Cambridge, Systems and Networking Group** **Apr. 2014**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"
- **University of Cambridge, Computer Laboratory Systems Seminar** **Mar. 2014**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"
- **Microsoft Research Redmond - Compression, Communication and Storage Group** **Jan. 2014**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"
- **IBM Research T.J. Watson** **Oct. 2012**
  "Temperature Management in Data Centres: Why Some (Might) Like it Hot"
- **IBM Research T.J. Watson** **Oct. 2012**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"
- **Boston University, Network Reading Group** **Sept. 2012**
  "Temperature Management in Data Centres: Why Some (Might) Like it Hot"
- **Carnegie Mellon University, Computer Architecture Lab** **Sept. 2012**
  "Cosmic Rays Don't Strikes Twice: Understanding the Nature of DRAM Errors and the Implications for System Design"

Teaching Experience

University of Toronto **Spring 2013**
Assistant Instructor: CSCC69 – Operating Systems

University of Toronto **Spring 2008 – Spring 2012**
Teaching Assistant

- Courses:
  - CSC469/2208: Advanced Operating Systems – *Fall 2014*
  - CSC423: Computer Forensics – *Fall 2011*
  - CSC369: Operating Systems – *Fall 2009, Fall 2010, Spring 2011, Spring 2012, Spring 2013, Fall 2014, Spring 2015, Fall 2015*
  - CSC148: Introduction to Computer Science – *Spring 2008, Spring 2009*
  - CSC108: Introduction to Computer Programming – *Fall 2008*
  - Developed instructional materials for an online section of CSC108: Introduction to Computer Programming – *Summer 2014*
- Selected to hold various workshops on the topics of Basic Algebra, Functions, and Problem Solving: *Fall 2008, Spring 2009, Summer 2009*.

Awards & Honours

- *Alexander Graham Bell Canada Graduate Scholarship (CGS D)*, NSERC **2013-2016**
- *Wolfond Fellowship*, University of Toronto **2010**
- *"U of T Scholar" Awards*, University of Toronto **2007-2009**
- *Samuel Beatty Award*, University of Toronto **2008**
- *Invited to the 2010 School in Pure and Applied Mathematics*, McGill University (Montreal, Canada) **2010**
- *Dean's Honour List*, University of Toronto Mississauga **2006-2010**
- *Accepted into the Mathematics and Computer Science Research Opportunity Programs*, University of Toronto Mississauga **2007-2008**

Academic & Extra-Curricular Service

Shadow Program Committee Member: Eurosys 2016 **2015**
Reviewer

- SOSP 2015, Usenix ATC 2015, ASPLOS 2015, Eurosys 2014, FAST 2014, Usenix ATC 2013, MASCOTS 2013, Systor 2012

Scribe for the FAST 2014 Programming Committee meeting **2013**
President, Computer Science Graduate Student Union (CSGSBS) **2015 - 2016**
Graduate Affairs Committee, Department of Computer Science **2014 - 2015**
Graduate Student Union Representative, Department of Computer Science **2013 - 2015**
Grad Visit Day Student Chair, Department of Computer Science **2013**

- Planned and organized the annual visit event for prospective graduate students.

Google Ambassador **2009 – 2010**

- Worked in a team to organize Google campus events and represent Google on campus.

VP Academics for the Math & Computer Science Student Society **2009 – 2010**

- Worked on planning, organizing, and holding various academic & industry seminars, charity events, and other student activities

Misc. Course Projects

Topics in the Design and Implementation of Operating Systems **2012**

- Designed and implemented a virtualized fault-injection framework based on QEMU.
- Framework simulated the effects of permanent memory errors in user-specified locations, and was designed to be extended to replay memory error traces on a live system.

Special Topics in Software Engineering: Dependable Systems **2012**

- Designed and implemented ReconDB, a modified version of SQLite that performs online consistency checking on critical DB metadata to protect itself against bugs in its own codebase.
- ReconDB's online consistency checks were based on metadata invariants derived from SQLite's built-in offline consistency checker.