James Bornholt

Contact

Computer Science and Engineering
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Education

University of Washington — Seattle, WA, USA
PhD, Computer Science and Engineering — September 2014 – present

- Advisors: Luis Ceze, Dan Grossman, and Emina Torlak
- Member of the programming languages and computer architecture groups

Australian National University — Canberra, Australia
Bachelor of Philosophy with First Class Honours and the University Medal — January 2010 – December 2013

- Majors in Computer Science and Mathematics
- Thesis: *Abstractions and Techniques for Programming with Uncertain Data*, advised by Steve Blackburn

Experience

University of Washington — Seattle, WA, USA
Graduate Student Researcher — September 2014 – present

Microsoft Research — Canberra, Australia
Software Engineer — January 2014 – September 2014

Microsoft Research — Redmond, WA, USA
Research Intern, Research in Software Engineering (RiSE) group — November 2012 – February 2013

Microsoft Research — Redmond, WA, USA
Research Intern, Research in Software Engineering (RiSE) group — November 2011 – February 2012

Google Summer of Code
Jikes RVM — Summer 2011

Publications

Conference and Journal Papers

J. Bornholt, E. Torlak, D. Grossman, and L. Ceze. *Optimal Program Synthesis*. To appear in POPL 2016, St. Petersburg, FL, USA, January 2016.

J. Bornholt, T. Mytkowicz, and K.S. McKinley. *Uncertain⟨T⟩: Abstractions for Uncertain Hardware and Software*. In IEEE Micro, vol. 35, no. 3, pp. 132–143, May–June 2015. *IEEE Micro's Top Picks from the Computer Architecture Conferences.*

A. Sampson, J. Bornholt, and L. Ceze. *Hardware–Software Co-Design: Not Just a Cliché*. In SNAPL 2015, Asilomar, CA, USA, May 2015.

J. Bornholt, T. Mytkowicz, and K.S. McKinley. *Uncertain⟨T⟩: A First-Order Type for Uncertain Data*. In ASPLOS 2014, Salt Lake City, UT, USA, March 2014. *ACM SIGPLAN Research Highlight, November 2014. Selected for IEEE Micro's Top Picks from the Computer Architecture Conferences, 2015.*

Workshop Papers

J. Bornholt and E. Torlak. *Scaling Program Synthesis by Exploiting Existing Code*. In ML4PL 2015, colocated with ECOOP 2015, Prague, Czech Republic, July 2015.

J. Bornholt, E. Torlak, L. Ceze, and D. Grossman. *Approximate Program Synthesis*. In WAX 2015, colocated with PLDI 2015, Portland, OR, USA, June 2015.

M. Wyse, A. Baixo, T. Moreau, B. Zorn, J. Bornholt, A. Sampson, L. Ceze, and M. Oskin. *REACT: A Framework for Rapid Exploration of Approximate Computing Techniques*. In WAX 2015, colocated with PLDI 2015, Portland, OR, USA, June 2015.

J. Bornholt, N. Meng, T. Mytkowicz, and K.S. McKinley. *Programming the Internet of Uncertain ⟨T⟩hings*. In SCAW 2015, colocated with HPCA 2015, San Francisco, CA, USA, February 2015.

J. Bornholt, T. Mytkowicz, and K.S. McKinley. *There's Something About Bayes: Effective Probabilistic Programming for the Rest of Us*. In APPROX 2014, colocated with PLDI 2014, Edinburgh, UK, June 2014.

Posters

J. Bornholt. *Uncertain⟨T⟩: A First-Order Type for Uncertain Data*. In PLDI 2013, Seattle, WA, USA, July 2013. *Winner, PLDI Student Research Competition, 2013. Second Place, ACM Student Research Competition Grand Final, 2014.*

J. Bornholt, T. Mytkowicz, and K.S. McKinley. *The Model Is Not Enough: Understanding Energy Consumption in Mobile Devices*. In Hot Chips 24, Cupertino, CA, USA, August 2012.

Teaching

Tutor, University of Washington — January 2015 – present

- CSE 341 (Programming Languages)

Service

Students Advised

- Emily McAlister, B. Software Eng., ANU, 2014 (co-advised with Steve Blackburn and Kathryn McKinley)
  Thesis: *The Relationship Between Software and Hardware Energy Consumption on Android Mobile Devices*

Committee Membership

- POPL Artifact Evaluation Committee, 2016
- PLDI Artifact Evaluation Committee, 2015

External Reviews

- CAV 2015
- ACM Transactions on Embedded Computing (TECS) 2015
- ASPLOS 2015

Awards

- IEEE Micro Top Picks from the Computer Architecture Conferences, for Uncertain⟨T⟩, 2015
- ACM SIGPLAN Research Highlight, for Uncertain⟨T⟩, 2014
- David Notkin Endowed Graduate Fellowship, University of Washington, 2014–2015
- Second Place, ACM Student Research Competition Grand Finals (undergraduate category), 2014
- ANU University Medal for Computer Science, 2013
- Winner, ACM PLDI Student Research Competition (undergraduate category), 2013
- ANU Erin Brent Computer Science Prize, 2013
- ANU College of Engineering and Computer Science Dean's Prize, 2013
- ANU Boyapati Computer Science and Mathematics Prize, 2010, 2011 and 2012