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HEATHER MILLER

Research Interests

Programming language and library design; language support for concurrency and distribution; type systems; reactive programming

Education

EPFL, *Lausanne, Switzerland* — *2009 –*
Ph.D. in Computer Science
Advisor: Martin Odersky — *2011 –*

University of Miami, *Coral Gables, FL* — *2006 – 2009*
BSEE in Electrical Engineering, Audio Engineering, *with honors, May 2009*

Publications

Functional Programming For All! Scaling a MOOC for Students and Professionals Alike — *ICSE 2014*
Heather Miller, Philipp Haller, Lukas Rytz, Martin Odersky
ACM SIGSOFT International Conference on Software Engineering

RAY: Integrating Rx and Async for Direct-Style Reactive Streams — *REM 2013*
Philipp Haller, Heather Miller
Workshop on Reactivity, Events and Modularity

Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization — *OOPSLA 2013*
Heather Miller, Philipp Haller, Eugene Burmako, Martin Odersky
ACM SIGPLAN Conference on Object Oriented Programming, Systems, Languages and Applications

FlowPools: A Lock-Free Deterministic Concurrent Dataflow Abstraction — *LCPC 2012*
Aleksandar Prokopec, Heather Miller, Tobias Schlatter, Philipp Haller, Martin Odersky
International Workshop on Languages and Compilers for Parallel Computing

Tools and Frameworks for Big Learning in Scala: Leveraging the Language for High Productivity and Performance — *BigLearn 2011*
Heather Miller, Philipp Haller, Martin Odersky
NIPS Workshop on Parallel and Large-Scale Machine Learning

Parallelizing Machine Learning – Functionally: A Framework and Abstractions for Parallel Graph Processing — *Scala 2011*
Philipp Haller, Heather Miller
Scala Workshop

Academic Service

Committees: Scala 2014 (organizer & co-chair), Scala 2013 (organizer & co-chair)
Reviewer for: ECOOP 2013, Scala 2013

Selected Broader Service

EPFL Computer Science Faculty Council, *PhD Student Representative* — *2012 –*
Members include the dean of the college as well as representatives from every branch of the college, administrative, PhD, faculty, etc Quarterly meetings to steer the college and introduce new initiatives.

EPFL CS Graduate Student Association, *President* — *2009 – 2011*
Volunteer student organization with a mission to foster a sense of community and collaboration between different research groups in the college. Initiatives led/introduced:

- **Research Day**: college-wide showcase of labs' research activities
- **PhD Student Open House**: main recruiting event for CS doctoral program
- **Social Events**: aperós, ski trips, outings

EPFL CS Graduate Student Mentor — *2010 – 2012*
One-on-one mentoring of incoming doctoral students, aided students in integrating into EPFL's research environment and Switzerland as a whole.

Teaching Experience	**Lead Teaching Assistant**, *Functional Programming Principles in Scala* Popular Coursera MOOC on functional programming in Scala, with >100,000 participants to date	*2012 – 2014*

- Lead TA organizing a team of graduate students, editing lecture videos, managing content production, designed course exercises with cloud-hosted grading, etc
- Created extensive course evaluations with interactive visualizations; led to ICSE'14 paper

	Instructor, *Scala as a Research Tool* ECOOP Tutorial	*2013*
	Lead Teaching Assistant, *Programming Principles* EPFL Undergraduate course on functional and logic programming	*2012*
	Teaching Assistant, *Programming Principles* EPFL Undergraduate course on functional and logic programming	*2011*
Open Source	**Scala Programming Language**, *member of the Scala team*	*2011 –*

- **Scala Spores** (Scala Improvement Proposal SIP-21), ***project lead***
  novel type-based abstraction for using closures safely in concurrent and distributed settings
- **Scala Pickling**, ***project lead***
  novel framework for fast, boilerplate-free, extensible serialization
- **Scala Futures and Promises** (Scala Improvement Proposal SIP-14), ***team member***
  unified non-blocking concurrency substrate for Scala, Akka, Play, and others
- **Scala Documentation**, ***creator, writer, lead maintainer***
  a central website for community-driven documentation for the Scala project
- **Scaladoc**, ***co-maintainer***
  documentation tool for Scala's official API documentation

Awards	US National Science Foundation Graduate Research Fellowship	*2011 – 2014*
	EPFL Outstanding Teaching Award	*2012*
	EPFL Computer Science Fellowship	*2009 – 2010*
	Most Outstanding Audio Engineering Student, University of Miami	*2009*
	Most Outstanding Eta Kappa Nu Student, University of Miami	*2009*
	Information Technology Scholarship, University of Miami	*2006 – 2009*
	John Farina Family Scholarship, University of Miami	*2006 – 2009*
	Eta Kappa Nu	*2008*
	Tau Beta Pi	*2008*
	SMART US Department of Defense Scholarship Alternate	*2007*
	Cooper Union Full Tuition Scholarship	*2004 – 2006*
Selected Talks	**Academese to English: Scala's Type System, Dependent Types and What It Means To You** New York, NY, USA. March 1, 2014	*NEScala 2014*
	Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization Indianapolis, IN, USA. October 30, 2013	*OOPSLA 2013*
	PL Abstractions for Distributed Programming: Pickle Your Spores! Bloomington, IN, USA. October 25, 2013	*Indiana University* ***(invited)***
	Spores: Distributable Functions in Scala St. Louis, MO, USA. September 19, 2013	*Strange Loop 2013*
	Open Issues in Dataflow Programming Montpellier, France. July 1, 2013	*LaME 2013* ***(invited)***
	On Pickles & Spores: Improving Scala's Support for Distributed Programming New York, NY, USA. June 12, 2013	*ScalaDays 2013*
	Futures & Promises in Scala 2.10 Philadelphia, PA, USA. April 2, 2013	*PhillyETE 2013* ***(invited)***