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HEATHER MILLER

Citizenship	USA
Research Interests	Programming language support for concurrent and distributed programming; type systems; language and library design; reactive programming
Education	<p><i>EPFL, Lausanne, Switzerland</i> 2009 – Ph.D. in Computer Science Advisor: Martin Odersky 2011 –</p> <p><i>University of Miami, Coral Gables, FL</i> 2006 – 2009 BSEE in Electrical Engineering, Audio Engineering, <i>with honors</i>, May 2009</p> <p><i>Cooper Union for the Advancement of Science and Art, New York, NY</i> 2004 – 2006</p>
Academic Service	<p>Committees: POPL 2015 AEC, Scala 2014 (co-chair), Scala 2013 (co-chair) Reviewer for: ECOOP 2013, Scala 2013</p>
Publications	<p>Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution ECOOP 2014 Heather Miller, Philipp Haller, Martin Odersky <i>European Conference on Object Oriented Programming</i></p> <p>Functional Programming For All! Scaling a MOOC for Students And Professionals Alike ICSE 2014 Heather Miller, Philipp Haller, Lukas Rytz, Martin Odersky <i>ACM SIGSOFT International Conference on Software Engineering</i></p> <p>Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization OOPSLA 2013 Heather Miller, Philipp Haller, Eugene Burmako, Martin Odersky <i>ACM SIGPLAN Conference on Object Oriented Programming, Systems, Languages and Applications</i></p> <p>RAY: Integrating Rx and Async for Direct-Style Reactive Streams REM 2013 Philipp Haller, Heather Miller <i>Workshop on Reactivity, Events and Modularity</i></p>

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

Invited to Revised Selected Papers on the 25th International Workshop on Languages and Compilers for Parallel Computing, Lecture Notes in Computer Science, Vol. 7760, 2013

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

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

Teaching Experience

Lead Teaching Assistant, *Functional Programming Principles in Scala*

2012 – 2014

Popular Coursera MOOC on functional programming in Scala, with >100,000 participants to date

- 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 a publication at ICSE'14

Instructor, *Scala as a Research Tool*

2013

ECOOP Tutorial

Lead Teaching Assistant, *Programming Principles*

2012

EPFL Undergraduate course on functional and logic programming

Teaching Assistant, *Programming Principles* 2011
EPFL Undergraduate course on functional and logic programming

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 environments
- [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 programming language and core libraries
- [Scaladoc](#), *co-maintainer*
documentation tool for Scala's official API documentation

Selected Talks

[Academese to English: Scala's Type System, Dependent Types and What It Means To You](#) NEScala 2014
New York, NY, USA. March 1, 2014

[Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization](#) OOPSLA 2013
Indianapolis, IN, USA. October 30, 2013

[PL Abstractions for Distributed Programming: Pickle Your Spores!](#) Indiana University (*invited*)
Bloomington, IN, USA. October 25, 2013

[Spores: Distributable Functions in Scala](#) Strange Loop 2013
St. Louis, MO, USA. September 19, 2013

[Open Issues in Dataflow Programming](#) LaME 2013 (*invited*)
Montpellier, France. July 1, 2013

[Scala as a Research Tool](#) ECOOP 2013 Tutorial
Montpellier, France. July 1, 2013

[On Pickles & Spores: Improving Scala's Support for Distributed Programming](#) ScalaDays 2013
New York, NY, USA. June 12, 2013

[Futures & Promises in Scala 2.10](#) PhillyETE 2013 (*invited*)
Philadelphia, PA, USA. April 2, 2013

Selected
Broader
Impacts

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.

Students
Supervised

Louis Bliss, Incremental Picklers for Scala Pickling 9/2013 – 1/2014
M.Sc. Level, co-supervision with Philipp Haller

Thaddée Yann Tyl, Learning Scala Style 2/2013 – 6/2013
M.Sc. thesis

Tobias Schlatter, FlowSeqs: Barrier-Free ParSeqs 9/2012 – 1/2013
M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec

Tobias Schlatter, Multi-Lane FlowPools 2/2012 – 6/2012
M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec

Pierre Grydbeck, Parallel Machine Learning: An Expectation Maximization Algorithm for Gaussian Mixture Models 2/2012 – 6/2012
M.Sc. level, co-supervision with Philipp Haller

Bruno Studer, Parallel Machine Learning: Collaborative Filtering via Alternating Least Squares 2/2012 – 6/2012
B.Sc. level, co-supervision with Philipp Haller

Stanislav Peshterliev, Parallel Natural Language Processing Algorithms in Scala 9/2011 – 1/2012
M.Sc. level, co-supervision with Philipp Haller

Olivier Blanvillain & Louis Bliss, Parallelization of a Collaborative Filtering Algorithm with Menthor 9/2011 – 1/2012
B.Sc. level, co-supervision with Philipp Haller

Florian Gysin, Improving Parallel Graph Processing Through the Introduction of Parallel Collections 9/2011 – 1/2012
M.Sc. level, co-supervision with Philipp Haller

Georges Discry, *Extending the Menthor Framework for Parallel
Graph Processing to Distributed Computing*
M.Sc. level, co-supervision with Philipp Haller

2/2011 – 6/2011