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HEATHER MILLER

Citizenship	USA	
Education	<p><i>EPFL, Lausanne, Switzerland</i> 2009 –</p> <p>Ph.D. in Computer Science</p> <p>Advisor: Martin Odersky 2011 –</p> <p><i>University of Miami, Coral Gables, FL</i> 2006 – 2009</p> <p>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>	
Professional Experience	<p>Research Intern, Databricks, Berkeley, CA, USA 8/2014 – 11/2014</p> <p>Supervisor: Matei Zaharia</p> <p>Integrated Scala Pickling, our framework for fast, boilerplate-free, extensible serialization focused on distributed programming (OOPSLA'13) into Spark.</p> <p>Developed new function-passing programming model and framework, can be thought of as a generalization of Spark/MapReduce programming model.</p>	
Teaching Experience	<p>Lecturer, Co-Designer, Reactive Programming & Parallelism 2015</p> <p>EPFL Undergraduate course on parallel, distributed, and asynchronous programming (~90 students)</p> <p>Lead, Functional Programming Principles in Scala 2012 – 2014</p> <p>Popular Coursera MOOC on functional programming in Scala, with >200,000 participants to date & largest completion rate for a course its size (~19%)</p> <ul style="list-style-type: none"> • Lead teaching staff organizing a team of graduate students, managing content production, designed course exercises with cloud-hosted grading, production of lecture videos, etc • Created extensive course analysis with interactive visualizations; led to a publication at ICSE'14 <p>Instructor, Scala as a Research Tool 2013</p> <p>ECOOP Tutorial</p> <p>(Lead) Teaching Assistant, Programming Principles 2011-2014</p> <p>Required EPFL undergraduate course on functional and logic programming (~160 students)</p>	

Research Interests	Concurrent, distributed, data-centric, and data-intensive (big data) programming, from the perspective of programming languages. I work on both theoretical ideas on and implementations for the Scala programming language which seek to make it easier to build distributed systems.	
Publications	Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution Heather Miller, Philipp Haller, Martin Odersky <i>European Conference on Object Oriented Programming</i>	<i>ECOOP 2014</i>
	Functional Programming For All! Scaling a MOOC for Students And Professionals Alike Heather Miller, Philipp Haller, Lukas Rytz, Martin Odersky <i>ACM SIGSOFT International Conference on Software Engineering</i>	<i>ICSE 2014</i>
	Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization Heather Miller, Philipp Haller, Eugene Burmako, Martin Odersky <i>ACM SIGPLAN Conference on Object Oriented Programming, Systems, Languages and Applications</i>	<i>OOPSLA 2013</i>
	RAY: Integrating Rx and Async for Direct-Style Reactive Streams Philipp Haller, Heather Miller <i>ACM SPLASH Workshop on Reactivity, Events and Modularity</i>	<i>REM 2013</i>
	FlowPools: A Lock-Free Deterministic Concurrent Dataflow Abstraction Aleksandar Prokopec, Heather Miller, Tobias Schlatter, Philipp Haller, Martin Odersky <i>International Workshop on Languages and Compilers for Parallel Computing</i> 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	<i>LCPC 2012</i>
	Tools and Frameworks for Big Learning in Scala: Leveraging the Language for High Productivity and Performance Heather Miller, Philipp Haller, Martin Odersky <i>NIPS Workshop on Parallel and Large-Scale Machine Learning</i>	<i>BigLearn 2011</i>
	Parallelizing Machine Learning – Functionally: A Framework and Abstractions for Parallel Graph Processing Philipp Haller, Heather Miller <i>Scala Workshop</i>	<i>Scala 2011</i>
Submitted/In Preparation	Function-Passing Style: Typed, Distributed Functional Programming Heather Miller, Philipp Haller	

Self-Assembly: Lightweight Language Extension and Datatype Generic Programming, All-in-One!

Heather Miller, Philipp Haller, Bruno C. d. S. Oliveira

Improving Human-Compiler Interaction Through Customizable Type Feedback

Hubert Plociniczak, Heather Miller, Martin Odersky

Selected Tech Reports

Spores, Formally

Heather Miller, Philipp Haller

December 2013

FlowPools: A Lock-Free Deterministic Concurrent Dataflow Abstraction – Proofs

Aleksandar Prokopec, Heather Miller, Philipp Haller

June 2012

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.
Adopted by sbt, the most widely-used build tool for Scala. Popular
open-source project on GitHub with >480 stars & dozens of contributors
- **Scala Futures & 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

Honors

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	Function Passing Style: Typed, Distributed Functional Programming St. Louis, MO, USA. September 19, 2014	<i>Strange Loop 2014</i>
	Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution Uppsala, Sweden. August 1, 2014	<i>ECOOP 2014</i>
	Functional Programming For All! Scaling a MOOC for Students and Professionals Alike Hyderabad, India. June 4, 2014	<i>ICSE 2014</i>
	Academese to English: Scala's Type System, Dependent Types and What It Means To You New York, NY, USA. March 1, 2014	<i>NEScala 2014</i>
	Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization Indianapolis, IN, USA. October 30, 2013	<i>OOPSLA 2013</i>
	PL Abstractions for Distributed Programming: Pickle Your Spores! Bloomington, IN, USA. October 25, 2013	<i>Indiana University (invited)</i>
	Spores: Distributable Functions in Scala St. Louis, MO, USA. September 19, 2013	<i>Strange Loop 2013</i>
	Open Issues in Dataflow Programming Montpellier, France. July 1, 2013	<i>LaME 2013 (invited)</i>
	Scala as a Research Tool Montpellier, France. July 1, 2013	<i>ECOOP 2013 Tutorial</i>
	On Pickles & Spores: Improving Scala's Support for Distributed Programming New York, NY, USA. June 12, 2013	<i>ScalaDays 2013</i>
	Futures & Promises in Scala 2.10 Philadelphia, PA, USA. April 2, 2013	<i>PhillyETE 2013 (invited)</i>

I am also a frequent speaker in industry, at industrial conferences, developer “meet-ups”, and everything in between. Some such events include:

f(by) (11/2014, Minsk, Belarus), **SF Scala** (11/2014, SF, USA), **Scalapeño** (9/2014, Tel Aviv, Israel), **SoundCloud TechTalks** (7/2014, Berlin, Germany), **Scala Days** (6/2014, Berlin, Germany), **NEScala** (3/2014, NYC, USA), amongst others.

External Activities	Hacker School, resident	2015
	Scalawags Monthly Podcast, co-host	2014 –
External Service	Committees:	
	DSLDI (PC Members)	7/2015
	ECOOP 2015 organizing committee (sponsorship)	7/2015
	Curry On Prague (co-chair)	7/2015
	Scala Symposium 2015 (Scala'15) (co-chair)	6/2015
	POPL 2015 AEC	10/2014
	Scala Workshop 2014 (Scala'14) (co-chair)	7/2014
	Scala Workshop 2013 (Scala'13) (co-chair)	7/2013
	External Reviewer for: ECOOP 2013, Scala 2013	
	Editor of proceedings for: Scala 2013, Scala 2014, Scala 2015	
Students Supervised ¹	Louis Bliss, <i>Incremental Picklers for Scala Pickling</i>	9/2013 – 1/2014
	M.Sc. level, co-supervision with Philipp Haller	
	Thaddée Yann Tyl, <i>Learning Scala Style</i>	2/2013 – 6/2013
	M.Sc. thesis	
	Tobias Schlatter, <i>FlowSeqs: Barrier-Free ParSeqs</i>	9/2012 – 1/2013
	M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec	
	Tobias Schlatter, <i>Multi-Lane FlowPools</i>	2/2012 – 6/2012
	M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec	
	Pierre Grydbeck, <i>Parallel Machine Learning: An Expectation Maximization Algorithm for Gaussian Mixture Models</i>	2/2012 – 6/2012
	M.Sc. level, co-supervision with Philipp Haller	
	Bruno Studer, <i>Parallel Machine Learning: Collaborative Filtering via Alternating Least Squares</i>	2/2012 – 6/2012
	B.Sc. level, co-supervision with Philipp Haller	
	Stanislav Peshterliev, <i>Parallel Natural Language Processing Algorithms in Scala</i>	9/2011 – 1/2012
	M.Sc. level, co-supervision with Philipp Haller	
	Olivier Blanvillain & Louis Bliss, <i>Parallelization of a Collaborative Filtering Algorithm with Menthor</i>	9/2011 – 1/2012
	B.Sc. level, co-supervision with Philipp Haller	
	Florian Gysin, <i>Improving Parallel Graph Processing Through the Introduction of Parallel Collections</i>	9/2011 – 1/2012
	M.Sc. level, co-supervision with Philipp Haller	

¹ At EPFL, research groups offer substantial projects for B.Sc./M.Sc. students to complete for credit. EPFL PhD students design and supervise these projects, as well as M.Sc. thesis projects.

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