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## HEATHER MILLER

<b>Citizenship</b>	USA	
<b>Education</b>	<i>EPFL, Lausanne, Switzerland</i>	2009 – 2015
	Ph.D. in Computer Science	
	Advisor: Martin Odersky	2011 – 2015
	<i>University of Miami, Coral Gables, FL</i>	2006 – 2009
	BSEE in Electrical Engineering, Audio Engineering, <i>with honors</i> , May 2009	
	<i>Cooper Union for the Advancement of Science and Art, New York, NY</i>	2004 – 2006
<b>Professional Experience</b>	<b>Research Intern, Databricks, Berkeley, CA, USA</b>	8/2014 – 11/2014
	Supervisor: Matei Zaharia	
	Integrated Scala Pickling, our framework for fast, boilerplate-free, extensible serialization focused on distributed programming (OOPSLA'13) into Spark.	
	Developed new function-passing programming model and framework, can be thought of as a generalization of Spark/MapReduce programming model.	
<b>Teaching Experience</b>	<b>Lecturer, Co-Designer, Reactive Programming &amp; Parallelism</b>	2015
	EPFL Undergraduate course on parallel, distributed, and asynchronous programming (~90 students)	
	<b>Lecturer, Co-Designer, Parallel Programming &amp; Data Analysis</b>	2015
	Upcoming Coursera MOOC on parallel, distributed, and asynchronous programming.	
	<b>Lead, Functional Programming Principles in Scala</b>	2012 – 2014
	Popular Coursera MOOC on functional programming in Scala, with >200,000 participants to date & largest completion rate for a course its size (~19%)	
	<ul style="list-style-type: none"> <li>• Lead teaching staff organizing a team of graduate students, managing content production, designed course exercises with cloud-hosted grading, production of lecture videos, etc</li> <li>• Created extensive course analysis with interactive visualizations; led to a publication at ICSE'14</li> </ul>	
	<b>(Lead) Teaching Assistant, Programming Principles</b>	2011-2014
	Required EPFL undergraduate course on functional & logic programming (~160 students)	
	<b>Instructor, Scala as a Research Tool</b>	2013
	ECOOP Tutorial	

<b>Research Interests</b>	Concurrent, distributed, data-centric, and data-intensive (big data) programming, from the perspective of programming languages. I work on both theoretical ideas & implementations for the Scala programming language which seek to make it easier to build distributed systems.	
<b>Publications</b>	<b>Distributed Programming via Safe Closure Passing</b> Philipp Haller, Heather Miller <i>Programming Language Approaches to Communication and Concurrency Centric Systems</i>	<i>PLACES 2015</i>
	<b>Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution</b> Heather Miller, Philipp Haller, Martin Odersky <i>European Conference on Object Oriented Programming</i>	<i>ECOOP 2014</i>
	<b>Functional Programming For All! Scaling a MOOC for Students And Professionals Alike</b> Heather Miller, Philipp Haller, Lukas Rytz, Martin Odersky <i>ACM SIGSOFT International Conference on Software Engineering</i>	<i>ICSE 2014</i>
	<b>Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization</b> 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>
	<b>RAY: Integrating Rx and Async for Direct-Style Reactive Streams</b> Philipp Haller, Heather Miller <i>ACM SPLASH Workshop on Reactivity, Events and Modularity</i>	<i>REM 2013</i>
	<b>FlowPools: A Lock-Free Deterministic Concurrent Dataflow Abstraction</b> 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>
	<b>Tools and Frameworks for Big Learning in Scala: Leveraging the Language for High Productivity and Performance</b> Heather Miller, Philipp Haller, Martin Odersky <i>NIPS Workshop on Parallel and Large-Scale Machine Learning</i>	<i>BigLearn 2011</i>
	<b>Parallelizing Machine Learning – Functionally: A Framework and Abstractions for Parallel Graph Processing</b> Philipp Haller, Heather Miller <i>Scala Workshop</i>	<i>Scala 2011</i>

Submitted/In Preparation	Function Passing: A Model for 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	<b>Spores, Formally</b> Heather Miller, Philipp Haller <i>December 2013</i>	
	<b>FlowPools: A Lock-Free Deterministic Concurrent Dataflow Abstraction – Proofs</b> Aleksandar Prokopec, Heather Miller, Philipp Haller <i>June 2012</i>	
Open Source	Scala Programming Language, <i>member of the Scala team</i>	2011 –
	<ul style="list-style-type: none"> <li>• <b>Scala Spores</b> (Scala Improvement Proposal SIP-21), <i>project lead</i> novel type-based abstraction for using closures safely in concurrent and distributed environments</li> <li>• <b>Scala Pickling</b>, <i>project lead</i> 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 &gt;480 stars &amp; dozens of contributors</li> <li>• <b>Scala Futures &amp; Promises</b> (Scala Improvement Proposal SIP-14), <i>team member</i> unified non-blocking concurrency substrate for Scala, Akka, Play, and others</li> <li>• <b>Scala Documentation</b>, <i>creator, writer, lead maintainer</i> a central website for community-driven documentation for the Scala programming language and core libraries</li> <li>• <b>Scaladoc</b>, <i>co-maintainer</i> documentation tool for Scala's official API documentation</li> </ul>	
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** *Strange Loop 2014*  
St. Louis, MO, USA. September 19, 2014
- Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution** *ECOOP 2014*  
Uppsala, Sweden. August 1, 2014
- Functional Programming For All! Scaling a MOOC for Students and Professionals Alike** *ICSE 2014*  
Hyderabad, India. June 4, 2014
- 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

*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

**Scalawags Monthly Podcast**, co-host

2014 –

## External Service

Curry On 2015, organizer (co-chair)	7/2015
ECOOP 2015, organizing committee member (sponsorship)	7/2015
PLE 2015, program committee member	7/2015
DSLDI 2015, program committee member	7/2015
Scala Symposium 2015, organizer (co-chair)	6/2015
POPL 2015, artifact evaluation committee member	1/2015
Scala Workshop 2014, organizer (co-chair)	7/2014
Scala Workshop 2013, organizer (co-chair)	7/2013
External Reviewer for: ECOOP 2013, Scala 2013	
Editor of proceedings for: Scala 2015, Scala 2014, Scala 2013	

## Students Supervised<sup>1</sup>

<b>Louis Bliss</b> , <i>Incremental Picklers for Scala Pickling</i> M.Sc. level, co-supervision with Philipp Haller	9/2013 – 1/2014
<b>Thaddée Yann Tyl</b> , <i>Learning Scala Style</i> M.Sc. thesis	2/2013 – 6/2013
<b>Tobias Schlatter</b> , <i>FlowSeqs: Barrier-Free ParSeqs</i> M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec	9/2012 – 1/2013
<b>Tobias Schlatter</b> , <i>Multi-Lane FlowPools</i> M.Sc. level, co-supervision w/ Philipp Haller & Aleksandar Prokopec	2/2012 – 6/2012
<b>Pierre Grydbeck</b> , <i>Parallel Machine Learning: An Expectation Maximization Algorithm for Gaussian Mixture Models</i> M.Sc. level, co-supervision with Philipp Haller	2/2012 – 6/2012
<b>Bruno Studer</b> , <i>Parallel Machine Learning: Collaborative Filtering via Alternating Least Squares</i> B.Sc. level, co-supervision with Philipp Haller	2/2012 – 6/2012
<b>Stanislav Peshterliev</b> , <i>Parallel Natural Language Processing Algorithms in Scala</i> M.Sc. level, co-supervision with Philipp Haller	9/2011 – 1/2012
<b>Olivier Blanvillain &amp; Louis Bliss</b> , <i>Parallelization of a Collaborative Filtering Algorithm with Menthor</i> B.Sc. level, co-supervision with Philipp Haller	9/2011 – 1/2012
<b>Florian Gysin</b> , <i>Improving Parallel Graph Processing Through the Introduction of Parallel Collections</i> M.Sc. level, co-supervision with Philipp Haller	9/2011 – 1/2012
<b>Georges Discry</b> , <i>Extending the Menthor Framework for Parallel Graph Processing to Distributed Computing</i> M.Sc. level, co-supervision with Philipp Haller	2/2011 – 6/2011

<sup>1</sup> 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.

## References

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