

- Research Intern, Microsoft Research** Summer 2013
- Tracing, modeling, and performance simulation of request execution in Microsoft Azure Storage
- Research Intern, Willow Garage** Summer 2012
- Developed web interfaces (<http://robotwebtools.org>) for the Robot Operating System
- Software Engineer, IBM UK** 2009 – 2011
- Emerging Technology Services: natural language systems research
 - Websphere Service Registry and Repository: UI development
- Extreme Blue Intern, IBM UK** Summer 2008
- Developed “InfoSlicer” application for One Laptop Per Child project

TEACHING**CS138: Distributed Systems**

Brown University

- Co-designed a rebooted course after several years’ hiatus (2015)
- Designed and developed course assignments in Go (2015)
- Teaching Assistant (2015) and Guest Lecturer (2015, 2016)
- Received “Great TA” award, nominated by students (2015)

CS168: Networking

Brown University

- Developed reference implementation of TCP/IP course assignment (2013)

Student Project Co-Advising

Brown University

- Kartik Singhal, M.Sc. 2017
End-to-end Tracing for Serverless Applications
- Joshua Liebow-Feeser, M.Sc. 2016
Causal Tracing for Go
- George Hongkai Sun, M.Sc. 2016
General Baggage Model for End-to-End Tracing and Its Application on Critical Path Analysis
- Ryan Roelke, M.Sc. 2015
Dynamic Causal Monitoring for Distributed Systems
- Jonathan Leavitt, M.Sc. 2014
End-to-End Tracing Models: Analysis and Unification
- Evan Wallace, B.Sc. 2012
RIDE: A web-based IDE for ROS

Education Outreach

Willow Garage

- Hosted a “Program a Robot” exhibit at The Tech Museum of Innovation, San Jose (2012)

IBM UK

- Taught a weekly “Introduction to Java” class to new graduate hires (2010)
- Taught weekly IT lessons at John Keble Primary School, Hursley (2010), and Weeke Primary School, Winchester (2011)
- Hosted a physics simulation exhibit for National Science and Engineering week (2010)
- Developed “InfoSlicer” application for One Laptop Per Child project (2008)

COMMUNITY

Reviewer for:

- *ACM Transactions on Networking*
- *IEEE Transactions on Parallel and Distributed Systems*

Member of the OpenTracing Industrial Advisory Board

PUBLICATIONS

Conferences

Universal Context Propagation for Distributed System Instrumentation

J. Mace and R. Fonseca

*In submission***Canopy: An End-to-End Performance Tracing And Analysis System**

J. Kaldor, J. Mace, M. Bejda, E. Gao, W. Kuropatwa, J. O'Neill, K. Ong, B. Schaller, P. Shan, B. Viscomi, V. Venkataraman, K. Veeraraghavan, Y. Song

*26th ACM Symposium on Operating Systems Principles (SOSP), October 2017***Principled Workflow-Centric Tracing of Distributed Systems**

R.R. Sambasivan, I. Shafer, J. Mace, B.H. Sigelman, R. Fonseca, and G.R. Ganger

*7th ACM Symposium on Cloud Computing (SoCC), October 2016***2DFQ: Two-Dimensional Fair Queuing for Multi-Tenant Cloud Services**

J. Mace, P. Bodik, R. Fonseca, M. Musuvathi, and K. Varadarajan

*ACM SIGCOMM Conference, August 2016***Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems**

J. Mace, R. Roelke, R. Fonseca

*25th ACM Symposium on Operating Systems Principles (SOSP), October 2015***Best Paper Award****Retro: Targeted Resource Management in Multi-Tenant Distributed Systems**

J. Mace, P. Bodik, R. Fonseca, and M. Musuvathi

*12th USENIX Symposium on Networked Systems Design and Implementation (NSDI), May 2015***Workshops**

We are Losing Track: a Case for Causal Metadata in Distributed Systems

R. Fonseca and J. Mace

*15th International Workshop on High Performance Transaction Systems (HPTS), October 2015***Towards General-Purpose Resource Management in Shared Cloud Services**

J. Mace, P. Bodik, R. Fonseca, and M. Musuvathi

*10th Workshop on Hot Topics in System Dependability (HotDep), October 2014***Journals**

Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems

J. Mace, R. Roelke, R. Fonseca

*to appear in ACM Transactions on Computer Systems (TOCS)***Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems**

J. Mace, R. Roelke, R. Fonseca

*to appear in Communications of the ACM (CACM)***Miscellaneous**

End-to-End Tracing: Adoption and Use Cases

J. Mace

*Survey, Brown University, March 2017***Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems**

J. Mace, R. Roelke, R. Fonseca

- *USENIX ;login: Magazine, Spring 2016*
- *Brown University Conduit Magazine, Spring 2016*

Revisiting End-to-End Trace Comparison with Graph Kernels

J. Mace and R. Fonseca

Master's Project, Brown University, May 2013

**PUBLICATIONS
CONT.****Posters**

Canopy: An End-to-End Performance Tracing And Analysis System

J. Kaldor, J. Mace, M. Bejda, E. Gao, W. Kuropatwa, J. O'Neill, K. Ong, B. Schaller, P. Shan, B. Viscomi, V. Venkataraman, K. Veeraraghavan, Y. Song

Presented at:

- *26th ACM Symposium on Operating Systems Principles (SOSP), October 2017*
- *4th New England Networking and Systems Day (NENS), December 2017*

Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems

J. Mace, R. Roelke, R. Fonseca

Presented at:

- *2nd New England Networking and Systems Day (NENS), October 2015*
- *25th ACM Symposium on Operating Systems Principles (SOSP), October 2015*
- *3rd Heidelberg Laureate Forum (HLF), August 2015*
- *12th USENIX Symposium on Networked Systems Design and Implementation (NSDI), May 2015*

Towards General-Purpose Resource Management in Shared Cloud Services

J. Mace, P. Bodik, R. Fonseca, and M. Musuvathi

Presented at:

- *Microsoft TechFest, March 2014*

Talks

Baggage Context: A Narrow Waist for Distributed Systems Instrumentation

Presented at:

- *4th New England Networking and Systems Day (NENS), December 2017*

Towards a Tracing Plane for Distributed Systems

Presented at:

- *OpenTracing Distributed Tracing Workshop, June 2017*
- *Los Alamos National Laboratory, Information Science and Technology Institute, May 2017*
- *OpenTracing Distributed Tracing Workshop, February 2017*

2DFQ: Two-Dimensional Fair Queuing for Multi-Tenant Cloud Services

Presented at:

- *ACM SIGCOMM Conference, August 2016*
- *Facebook New York, August 2016*

Pivot Tracing: Dynamic Causal Monitoring for Distributed Systems

Presented at:

- *2016 USENIX Annual Technical Conference (ATC), June 2016*
- *MIT Database Group Seminar, November 2015*
- *Facebook New York, November 2015*
- *25th ACM Symposium on Operating Systems Principles (SOSP), October 2015*

Retro: Targeted Resource Management in Multi-Tenant Distributed Systems

Presented at:

- *12th USENIX Symposium on Networked Systems Design and Implementation (NSDI), May 2015*
- *Tracelytics, Providence RI, December 2014*
- *1st New England Networking and Systems Day (NENS), October 2014*

Towards General-Purpose Resource Management in Shared Cloud Services

Presented at:

- *10th Workshop on Hot Topics in System Dependability (HotDep), October 2014*

**PUBLICATIONS
CONT.**

Patents

- A. Bridgen, A. Flatt, J. Mace, R. Pilot. **Multi-Modal Journey Planner** *US Patent 9,594,772, 2017*
- S. Horsman, M. Kockott, J. Mace, and A. Moger. **Representing a Graphical User Interface using a Topic Tree Structure** *US Patent 9,046,982, 2015*
- A. Armstrong, J. Mace, and R. Pilot. **Dynamic Setting of Increments on an Amplitude Scale** *US Patent 9,037,276, 2015*
- A. Armstrong, J. Mace, and R. Pilot. **Presenting a Custom View in an Integrated Development Environment based on a Variable Selection** *US Patent 8,959,479, 2015*
- A. Bridgen, A. Flatt, J. Mace, and R. Pilot. **Flattening a Subset of Configuration UI Panels in a Hierarchy of UI Panels** *US Patent 8,898,589, 2014*
- A. Armstrong, J. Mace, and R. Pilot. **Method for modifying a User Interface** *US Patent 8,751,871, 2014*
- A. Armstrong, S. Burns, and J. Mace. **Configuration of Widgets in a Mashup Environment** *US Patent App. 13/943,450, 2013*
- A. Bridgen, A. Flatt, J. Mace, and R. Pilot. **Dynamic File Retrieving for Web Page Loading** *US Patent App. 13/679,103, 2012*
- A. Armstrong, J. Mace, and M. Whitbourne. **Translating User Interface Sounds into 3D Audio Space** *US Patent App. 13/462,740, 2012*
- A. Armstrong, J. Mace, and R. Pilot. **Adaptive Touch-Sensitive Displays and Methods** *US Patent App. 12/982,700, 2010*

**OPEN-SOURCE
CONTRIBUTIONS**

OpenTracing Industrial Advisory Board

<http://opentracing.io>

Initiative to develop standards for cross-platform end-to-end tracing, with an emphasis on open-source systems and tracing frameworks

Tracing Plane

<http://github.com/TracingPlane>

An interface definition language, compiler, protocol, and data format for general-purpose cross-platform baggage contexts

Brown Tracing Framework

<http://brownsys.github.io/tracing-framework>

Research artifacts from the Retro and Pivot Tracing projects

Hadoop and Spark

<http://github.com/brownsys/spark>

<http://github.com/brownsys/hadoop>

Forks of Hadoop and Spark with end-to-end instrumentation, compatible with Brown Tracing Framework

Spark TPC-DS

<http://github.com/brownsys/tpcds>

Implementation of the TPC-DS Big Data benchmark (<http://www.tpc.org/tpcds>) for Apache Spark

Robot Web Tools

<http://robotwebtools.org>

Open-source modules and tools for browsers to interface with the Robot Operating System

Infoslicer

http://wiki.sugarlabs.org/go/Activities/Info_Slicer

Application for the One Laptop Per Child for editing and distributing Wikipedia content