# Ilari Shafer

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# Education

Carnegie Mellon University, Pittsburgh, PA	2010 - 2013
M.S. in Computer Science	
National Science Foundation (NSF) Fellow	2012 - 2015
National Defense Science and Engineering Graduate (NDSEG) Fellow	2010 - 2012
Franklin W. Olin College of Engineering, Needham, MA	2006 - 2010
B.S. in Electrical and Computer Engineering. GPA: 3.97; Recipient of four-year full-tuition	Olin Scholarship

### Employment

Google – Configuration Analysis, Mountain View, CA	Summer 2012		
Analyzed large-scale infrastructure configuration data (details are confidential). Used data-mining	techniques, pro-		
prietary distributed computing frameworks, and user surveys to search for results.			
VMware – Interactive System Monitoring, Palo Alto, CA	Summer 2011		
Designed and implemented system for interactive analysis of historical datacenter operations statistics. Evaluated			
collection and retrieval on a production cloud. Finalist in poster contest. Won second place in "flings" competition			
for plotscope (http://go.mrcaps.com/Plotscope), a separate data exploration tool.			
Microsoft – Web Browser Development, Redmond, WA	Summer 2010		
Worked on the Internet Explorer (IE) team for 11 weeks. Developed a design document, implemented, tested,			
performance-tuned, and checked-in a feature that shipped in IE9. Fixed bugs and contributed to other development.			
MITRE – Message Implementation and Visualization, Bedford, MA	Summer 2009		
Developed extensions to a service bus for message translation and developed tools to visualize data flow and binary			
content. Composed detailed technical report. Delivered two well-received briefings of work to MITRE senior staff.			
Wisconsin State Lab of Hygiene, Madison, WI Summer + Intersession 2006	, Summer 2007		
Worked on database and user interface components of EDAM-ENCHILADA, a data mining tool for very large aerosol			
chemistry datasets. Collaborated with group of students, staff, and a professor from Carleton College.			

# **Research Experience**

Carnegie Mellon University, Time Series, Configuration, Visualization	2010 - 1	Present
• Designing and developing a datastore specialized for numeric time series data.	Surveyed requirements for	such a
system, published proposal and began analysis of prototype.		

- Investigating techniques for correlating time series monitoring data and configuration events. Built platform for capturing configuration changes and infrastructure data, and deployed it to clusters at multiple campuses.
- Extending a diagnosis tool for distributed systems with a visualization of its graph-based output.

Olin NASA Research Group, Sun Sensor Development Summer 2008 Developed circuitry and microcontroller firmware for multi-channel signal analyzer. Constructed and tested sun orientation sensor and evaluated its potential for use in a space environment. Documented project for researchers at Goddard SFC and presented results at CubeSat workshop at University of Maryland - Baltimore County.

Olin NSF-LURE Research Group, Microvessel Modeling Participated in a summer and two semesters of mathematical modeling of micro-blood vessels at Olin College. Applied differential equations and MATLAB to develop analytic and numerical results surrounding vessel adaptation. Presented results at conferences in Richmond and San Diego (SIAM AN08); published paper.

# Publications

### Peer-reviewed

- Raja R. Sambasivan, Ilari Shafer, Michelle L. Mazurek, Gregory R. Ganger. "Visualizing request-flow comparison to aid performance diagnosis in distributed systems." IEEE InfoVis 2013 (supersedes CMU-PDL-13-104, CMU-PDL-12-102)
- 4. Ilari Shafer, Raja R. Sambasivan, Anthony Rowe, Gregory R. Ganger. Specialized Storage for Big Numeric Time Series. HotStorage 2013.

- Ilari Shafer, Kai Ren, Vishnu Naresh Boddeti, Yoshihisa Abe, Gregory R. Ganger, Christos Faloutsos. Rain-Mon: An Integrated Approach to Mining Bursty Timeseries Monitoring Data. ACM KDD (I+G track) 2012. doi:10.1145/2339530.2339711
- Ilari Shafer, Mark L. Chang. "Movement Detection for Power-Efficient Smartphone WLAN Localization." The 13th ACM International Conference on Modeling, Analysis, and Simulation of Wireless and Mobile Systems 2010. doi:10.1145/1868521.1868536
- Ilari Shafer, Rachel Nancollas, Morgan Boes, Alisha L. Sieminski, John B. Geddes. "Stability of a microvessel subject to structural adaptation of diameter and wall thickness." Mathematical Medicine and Biology 2010. doi:10.1093/imammb/dqq014

#### Invited

1. Ilari Shafer, Snorri Gylfason, Gregory R. Ganger. vQuery: A Platform for Connecting Configuration and Performance. VMware Technical Journal, Vol. 1, No. 2, December 2012.

#### **Technical Reports**

1. Michael Maass, Ilari Shafer. Instrumenting V8 to Measure the Efficacy of Dynamic Optimizations on Production Code. CMU-ISR-13-103, 2013.

### Significant Projects

### Senior Capstone Project – IBM Research

Creating a distributed systems architecture based on a functional, virtualized component model. Collaborating with team of Olin students, faculty member, and sponsors (two IBM Fellows) to plan, execute, and present project.

#### **Advising Tool Development**

Wrote a web application to assist students and advisors in planning courses at Olin. Created an intuitive drag-anddrop interface with jQuery and AJAX, and wrote a custom PDF printout. Coordinated tests with users and faculty. After a first release in Spring 2009, over half the student body had an account.

#### Design

Designed http://www.tottimer.com, http://www.stridepad.com, http://www.rainmon.com/, http://www.queenieandthebluecats.com/, http://www.michaeljmaloney.com/, others. Layout and design for three high school newspapers. Please see http://www.mrcaps.com/ for more detailed project information.

### Qualifications and Skills

Clearance: Department of Defense security clearance at the SECRET level (inactive) Programming: Primary languages: Java, JavaScript, Python, C, C++, R. Software: SVN, Git, Eclipse, LATEX, VMware infrastructure, Inkscape, InDesign, Fireworks

### Teaching Experience

Carnegie Mellon University Teaching Assistant for 15-740: Graduate Computer Architecture	Sept 2012 – Dec 2012
Olin College	
Teaching Assistant for Mobile Application Development	Jan 2010 – May 2010
Teaching Assistant for Google AppInventor	Sept $2009 - Dec 2009$
Teaching Assistant for Software Systems	Sept $2009 - Dec 2009$
Teaching Assistant for Foundations of Computer Science	Jan $2009 - May 2009$
Peer Tutor for Software Design	Jan $2009 - May 2009$
Teaching Assistant for Software Design	Feb 2008 – May 2008
Peer Tutor for Signals and Systems	Feb 2008 – May 2008
Teaching Assistant for Programming and Physics	Sept $2007 - Dec 2007$

# Activities and Interests

**Carnegie Mellon** Problem Diagnosis Reading Group Member Sept 2009 – May 2010

Summer 2008 – 2010

2002 - present

# Olin College

Olin College Honor Board Member Advising Advisory Board Member Por Supuesto - Spanish Conversation Habitat for Humanity Member SERV - Volunteered at soup kitchens, shelters, and events in Boston  $\begin{array}{r} 2006-2010\\ {\rm Sept}\ 2008-{\rm May}\ 2009\\ {\rm Sept}\ 2006-2010\\ {\rm Sept}\ 2006-{\rm Apr}\ 2007\\ {\rm Sept}\ 2006-2010 \end{array}$ 

etc: Piano, running, XC skiing, strategy games