Deborah S. Katz

CONTACT
INFORMATION

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EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA
Computer Science Department

  M.S., Computer Science   **May 2015**

  Ph.D., Computer Science   **September 2020**

- Advisor: Claire Le Goues

New York University School of Law, New York, New York, USA

  J.D.   **May 2007**

- **Honors:** Executive Editor, *Environmental Law Journal*

Amherst College, Amherst, Massachusetts, USA

  B.A., Computer Science   **May 2004**

- **Honors:** Departmental *summa cum laude* for honors thesis; Associate Member Sigma Xi

PAPERS ACCEPTED
FOR PUBLICATION

Robustness Inside Out Testing, Deborah S. Katz, Milda Zizyte, Casidhe Hutchison, David Guttendorf, Patrick E. Lanigan, Eric Sample, Philip Koopman, Michael Wagner, and Claire Le Goues, in Dependable Systems and Networks – Industry Track, DSN-Industry 2020, *to appear.*

Detecting Execution Anomalies As an Oracle for Autonomy Software Robustness, Deborah S. Katz, Casidhe Hutchison, Milda Zizyte, and Claire Le Goues, in International Conference on Robotics and Automation, ICRA 2020.

Crashing Simulated Planes is Cheap: Can Simulation Detect Robotics Bugs Early?, Christopher Steven Timperley, Afsoon Afzal, Deborah S. Katz, Jam Marcos Hernandez, and Claire Le Goues, in International Conference on Software Testing, Validation and Verification, ICST 2018.

Using Recurrent Neural Networks for Decompilation, Deborah S. Katz, Jason Ruchti, and Eric Schulte, in Software Analysis, Evolution, and Reengineering, SANER 2018.

Understanding Intended Behavior Using Models of Low-level Signals, Deborah S. Katz, in International Symposium on Software Testing and Analysis Doctoral Symposium, ISSTA-DOC 2017.

PAPERS UNDER
SUBMISSION

A Study on the Challenges of Using Robotics Simulators for Testing, Afsoon Afzal, Deborah S. Katz, Claire Le Goues, and Christopher Steven Timperley.

INVITED TALKS

Ensuring Software Quality in Complex Settings, Amherst College, October 2019.

Identification of Software Failures in Robotics Systems Using Low-Level Execution Data and Robustness Inside Out Testing, ROS Quality Assurance Working Group Meeting, September 2020.

Moderator: Panel: Software Quality in Robotics, ROS World, November 2020.

RESEARCH AND
TEACHING
EXPERIENCE

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Graduate Research Assistant **August 2012 - September 2012**

Conducted research under the supervision of Professor Claire Le Goues and in collaboration with Professor Philip Koopman. Investigated use of low-level execution data obtained through dynamic binary execution as a tool for assessing program behavior, with particular application to robotics and autonomous systems. Investigated robustness testing of robotics systems and applications of the above techniques thereto, in collaboration with the National Robotics Engineering Center. Analyzed nondeterministic properties of and effects of timing delays on robotics systems. Researched barriers to systematic automated testing and simulation of autonomous and robotics systems.

Relevant Courses

- 15-740: Computer Architecture; 15-744: Computer Networks; 15-745: Optimizing Compilers for Modern Architectures; 15-814: Type Systems; 15-887: Planning, Learning, and Execution; 17-808: Software Engineering Research

Teaching Assistant

- 15-745: Optimizing Compilers for Modern Architectures **Spring 2014**
- 17-654: Analysis of Software Artifacts **Spring 2015**

Service

- Computer Science Department Masters Admissions Committee **2012-2017**

GrammaTech, Inc., Ithaca, New York, USA **Summer 2016**

Software Engineering Intern

Built a system for decompilation of binary data to C code, based on an existing model for natural language translation using recurrent neural networks (RNNs). Researched various issues relating to decompilation, RNNs, how to extend existing RNN-based models, and hardware for running RNNs.

Oracle America, Inc., Redwood Shores, California, USA **Summer 2013**

Research Intern

Investigated effects of compiler optimizations on Oracle Database performance. Wrote microbenchmarks in x86-64 assembly to simulate optimization effects. Drafted article and gave talk on same.

NYU Environmental Law Journal, New York, New York, USA **Fall 2005 - Spring 2007**

Staff Editor (2005-2006), Executive Editor (2006-2007)

Primary responsibility for several articles each issue. Led team to confirm factual and legal assertions.

Honors Thesis, Amherst College, Amherst, Massachusetts, USA **Fall 2003 - Spring 2004**

An Evaluation of the SEGQ Replacement Policy with Adaptive Variations for Running Time Reduction

Designed, coded, and ran experiments to simulate page replacement policies for virtual memory management. Evaluated data. Designed and simulated novel replacement policies based on results.

PROFESSIONAL
EXPERIENCE

Ropes & Gray LLP, New York, New York, USA **September 2007 - September 2009**

Intellectual Property Litigation Associate Attorney **September 2010 - February 2012**

Participated in many aspects of patent litigation and related matters. Analyzed technical descriptions and claims in patents. Analyzed products and technical documents to determine infringement. Prepared written materials to explain complex technological concepts for non-technical audiences. Worked closely with technical experts. Advised clients. Dealt with varied technologies.

ADDITIONAL
INFORMATION

Basic knowledge of reading French and Spanish; conversational Spanish. Eligible to practice law in New York and Massachusetts. Enjoy theater, literature, knitting, travel, and cooking. A founding producer of the CMU SCS graduate student musical. Visited all seven continents during sabbatical year, 2009-2010.