

Curriculum Vitae

Paul Gazzillo

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Academic Experience

Appointments at University of Central Florida

2018-Now Assistant Professor, Department of Computer Science

2018-Now Core Member, Cyber Security and Privacy Faculty Research Cluster

Previous Academic Experience

2017-2018 Research Scholar, Stevens Institute of Technology, Hoboken, NJ

Co-Advisors: Eric Koskinen (Stevens Institute) and Michael Hicks (UMD College Park)

2016-2017 Post-Doctoral Associate, Yale University, New Haven, CT

Advisor: Eric Koskinen

2014-2015 MacCracken Fellow, New York University, New York, NY

Advisor: Thomas Wies

2011-2014 Research Assistant, New York University, New York, NY

Advisor: Robert Grimm

2010 Junior Research Scientist (Summer), New York University, New York, NY

Advisor: Robert Grimm

Industry Experience

2018 Core Team, Taraxa.io

2013 Software Engineering Intern (Summer), Google, Mountain View, CA

2009 Financial Software Development Intern (Summer), Bloomberg LP, New York, NY

2004-2008 Research Data Analyst, Educational Testing Service, Princeton, NJ

2000-2004 Programmer (Summers & Part-Time), Educational Testing Service, Princeton, NJ

Education

2016 PhD Computer Science, Courant Institute, New York University, New York, NY

Advisors: Robert Grimm, Thomas Wies

Thesis: Analyzing Source Code Across Static Conditionals

2011 MS Computer Science, Courant Institute, New York University, New York, NY

Advisor: Robert Grimm

Thesis: Configuration-Preserving C Parsing

2003 BS Computer Science and Mathematics, Rutgers University, New Brunswick, NJ

Awards and Honors

- Jan 2020 NSF CAREER Award
- Oct 2012 SIGPLAN Research Highlight for SuperC (PLDI 2012)
- May 2012 Matthew Smosna Prize, Courant Institute, New York University
- May 2005 Outstanding Contributor Award, Educational Testing Service

Fellowships

- 2014-2015 MacCracken Fellowship, New York University
- Spr 2013 Global Research Initiative Fellowship, New York University Shanghai

Sponsored Research

- NSF CCF-1941816 CAREER: Inferring and Securing Software Configurations through Automated Reasoning. \$419k. Jun. 2020–2025. PI: Paul Gazzillo.
- NSF CCF-1840934 SHF: Small: Collaborative Research: Static Analysis Infrastructure for Variability-Aware Bug Detection and Translation of Highly-Configurable Software Systems. \$229k. Oct. 2018–2021. PI: Paul Gazzillo. (This is part of a multi-institution grant with UT Dallas.)
 - Research Experience for Undergraduates (REU) Supplement \$8k, Summer 2020
 - Research Experience for Undergraduates (REU) Supplement \$16k, Summer 2019

Refereed Journal Articles

- DIST 2019 “Adding Concurrency to Smart Contracts” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, and Eric Koskinen. Distributed Computing, 2019.
- EATCS 2018 “How to add concurrency to smart contracts” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, and Eric Koskinen. Bulletin of the European Association for Theoretical Computer Science. Number 124. 22-33, February 2018.

Refereed Conference Proceedings

- ESEC/FSE V&R 2020 (To appear) “Inferring and Securing Software Configurations Using Automated Reasoning” by Paul Gazzillo Proceedings of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering, Visions & Reflections Track.
Acceptance Rate: 38% (8 out of 21 submissions)
- APLAS 2019 “Conflict Abstractions and Shadow Speculation for Optimistic Transactional Objects” by Thomas Dickerson, Eric Koskinen, Paul Gazzillo, and Maurice Herlihy. Asian Symposium on Programming Languages and Systems.
Acceptance Rate: 44% (22 out of 50 submissions)
- SPLC-CC 2019 “t-wise Coverage by Uniform Sampling” by Jeho Oh, Paul Gazzillo, and Don Batory. Proceedings of International Systems and Software Product Line Conference, Challenge Track.
- ESEC/FSE 2019 “An Empirical Study of Real-World Variability Bugs Detected by Variability-Oblivious Tools” by Austin Mordahl, Jeho Oh, Ugur Koc, Shiyi Wei and Paul

Gazzillo Proceedings of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering.
Acceptance Rate: 24% (74 out of 303 submissions)

ICSE-NIER 2019 “Conditional Compilation is Dead, Long Live Conditional Compilation!” by Paul Gazzillo and Shiyi Wei. “Proceedings of International Conference on Software Engineering: New Ideas and Emerging Results”.
Acceptance Rate: 27% (25 out of 92 submissions)

SPLC-CC 2018 “Localizing Configurations in Highly-Configurable Systems” by Paul Gazzillo, Ugur Koc, ThanhVu Nguyen, and Shiyi Wei. Proceedings of International Systems and Software Product Line Conference, Challenge Track.

ESEC/FSE 2017 “Kmax: Finding All Configurations of Kbuild Makefiles Statically” by Paul Gazzillo. Proceedings of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering.
Acceptance Rate: 24% (72 out of 295 submissions)

PODC 2017 “Adding Concurrency to Smart Contracts” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, and Eric Koskinen. Proceedings of the 2017 ACM Symposium on Principles of Distributed Computing.
Acceptance Rate: 25% (38 out of 154 submissions)

PODC 2017 “Brief Announcement: Proust: A Design Space for Highly-Concurrent Transactional Data Structures” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, and Eric Koskinen. Proceedings of the 2017 ACM Symposium on Principles of Distributed Computing.

PLDI 2017 “Decomposition Instead of Self-Composition for Proving the Absence of Timing Channels” by Timos Antonopoulos, Paul Gazzillo, Michael Hicks, Eric Koskinen, Tachio Terauchi, and Shiyi Wei. Proceedings of the ACM SIGPLAN 2017 Conference on Programming Language Design and Implementation.
Acceptance Rate: 15% (47 out of 322 submissions)

PLDI 2012 “SuperC: Parsing All of C by Taming the Preprocessor” by Paul Gazzillo and Robert Grimm. Proceedings of the ACM SIGPLAN 2012 Conference on Programming Language Design and Implementation, pp. 323-334, June 2012.
Acceptance Rate: 19% (48 out of 255 submissions)

SIGPLAN Research Highlights Paper

Refereed Workshop Proceedings

WTSC 2018 “Proof-Carrying Smart Contracts” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, Vikram Saraph, and Eric Koskinen. Workshop on Trusted Smart Contracts, 2018.

Technical Reports

2019 “Uniform Sampling from Kconfig Feature Models” by Jeho Oh, Paul Gazzillo, Don Batory, Marijn Heule, and Maggie Myers. Technical Report TR-19-02, Department of Computer Science, University of Texas at Austin, 2018.

2018 “Multi-Objective Optimization in Large Software Product Lines” by Jeho Oh, Don Batory, and Paul Gazzillo. Technical Report TR-18-02, Department of Computer Science, University of Texas at Austin, 2018.

- 2017 “Proust: A Design Space for Highly-Concurrent Transactional Data Structures” by Thomas Dickerson, Paul Gazzillo, Maurice Herlihy, and Eric Koskinen. arXiv:1702.04866v1 16 Feb 2017.
- 2016 “Vertical Composition of Reversible Atomic Objects” by Timos Antonopoulos, Paul Gazzillo, Eric Koskinen, and Zhong Shao. Technical Report YALEU/DCS/TR1529, Computer Science Department, Yale University, 2016
- 2015 “Kmax: Analyzing the Linux Build System” by Paul Gazzillo. Technical Report TR2015-976, Computer Science Department, New York University, 2015.
- 2011 “Parsing all of C by taming the preprocessor” by Paul Gazzillo and Robert Grimm. Technical Report TR2011-939, Computer Science Department, New York University, 2011.

Patents

- 2017 Adding Concurrency to Smart Contracts (patent pending)
- 2014 Configuration-Preserving Preprocessor, 9,389,842, issued 2016
- 2013 Configuration-Preserving Preprocessor and Configuration-Preserving Parser, 8,806,456, issued 2014
- 2008 Data Structure for Defining a Chart, application 2008/0086679
- 2008 Method and System for XML Multi-Transform, 9,189,464, issued 2015

Dissertation

- 2016 “Analyzing Source Code Across Static Conditionals” by Paul Gazzillo. PhD Thesis, Department of Computer Science, New York University.

Advising

Graduate Researchers

- 2020-Now Ryan Dozier (Co-Advised with Prof. Damian Dechev)
- 2019-Now Jeho Oh, University of Texas at Austin (Co-Advised with Prof. Don Batory)
- Fall 2019 Sayma Sultana

Undergraduate Researchers

- 2020-Now Reeder Ward, Undergraduate Research Assistant
- 2020-Now Alexandra Arriola, EXCEL Program
- 2019-Now Genoveva Fossas, Undergraduate Research Assistant
- 2019-Now Joshua Santana, Undergraduate Research Assistant
- 2019-Now Kaarthik Alagappan, Undergraduate Research Assistant
- 2019-Now Julian Braha, Undergraduate Research Assistant
- Sum 2019 Joshua Santana, Research Experience for Undergraduates
- Sum 2019 Pradheep Kethi-Reddy, Research Experience for Undergraduates
- Spr 2019 Jia Jin Koay, Undergraduate Research Assistant

PhD Dissertation Committees

- 2020 Mohammed Abuhamad, Computer Science, University of Central Florida
- 2020-Now Vamsee Reddy Kommareddy, Computer Engineering, University of Central Florida
- 2019-Now Bingbing Rao, Computer Science, University of Central Florida
- 2019-Now Amirfarhad Nilizadeh, Computer Science, University of Central Florida

Masters Thesis Committees

- 2020-Now Faishal Wahiduddin, Computer Science, University of Central Florida

Honors Thesis Committees

- 2019-Now Committee Chair, Reeder Ward, Computer Science, University of Central Florida
- 2019-2020 Committee Member, Curtis Helsel, Computer Science, University of Central Florida

Independent Studies

- Sum 2020 Zachary Lyons, Analysis of Configurable Software.
- Sum 2019 Geoffrey Hufford, Software Engineering for Build and Configuration Systems.

Senior Design Projects

- 2020 Learning Programming with the 2DS (Spring and Fall 2020)
- 2020 Security fault prediction, continued (Spring and Fall 2020)
- 2019 Security fault prediction (Spring and Fall 2019)
- 2019 Cryptocurrency exchange (Spring and Fall 2019)
- 2019 Concurrent smart contracts (co-sponsor) (Spring and Fall 2019)

Teaching Experience

As Instructor

- Spr 2020 Instructor, COP-5021 Program Analysis, University of Central Florida
Teaching Evaluations: Overall 4.45/5.00 (Department: 3.89; University: 3.97)
(13/23 students responding)
- Fall 2019 Instructor, COP-3402 Systems Software, University of Central Florida
Teaching Evaluations: Overall 4.20/5.00 (Department: 3.97; University: 4.14)
(155/249 students responding)
- Spr 2019 Instructor, COP-3402 Systems Software, University of Central Florida
Teaching Evaluations: Overall 4.05/5.00 (Department: 3.99; University: 4.15)
(77/199 students responding)
- Fall 2018 Instructor, COP-3402 Systems Software, University of Central Florida
Teaching Evaluations: Overall 4.49/5.00 (Department: 4.00; University: 4.12)
(126/215 students responding)

As Assistant

- Spr 2015 Recitation Leader, Data Structures, New York University
- Fall 2014 Recitation Leader, Data Structures, New York University
- Spr 2010 Teaching Assistant, Compilers, New York University
- Spr 2010 Teaching Assistant, Operating Systems, New York University
- Fall 2009 Teaching Assistant, Computer Organization, New York University

Talks

- March 2020 “Free Software Enables Free Science”, LibrePlanet 2020
- Aug 2019 “Good Engineering Makes for Good Science”, The Third ROSE Festival, ESEC/FSE 2019, Tallinn, Estonia
- June 2019 “Conditional Compilation is Dead, Long Live Conditional Compilation!”, The International Conference on Software Engineering: New Ideas and Emerging Results Track, Montreal, Canada
- May 2019 Guest Talk: “Can We Replace the Preprocessor by Extending C?”, The 3rd Summit on Advances in Programming Languages, Providence, RI
- May 2019 Invited Talk: “Security Considerations for Highly-Configurable Software”, 1st International Conference on Smart Tourism, Smart Cities and Enabling Technologies.
- Sep 2018 “Localizing Configurations in Highly-Configurable Systems”, International Systems and Software Product Line Conference, Challenge Track, Gothenburg, Sweden
- Mar 2018 “Automating Safe and Secure Software Development”, University of South Florida, Tampa, FL
- Mar 2018 “Automating Safe and Secure Software Development”, University of Central Florida, Orlando, FL
- Feb 2018 “Automating Safe and Secure Software Development”, University of Vermont, Burlington, VT
- Sep 2017 “Kmax: Finding All Configurations of Kbuild Makefiles Statically”, European Software Engineering Conference and Foundations of Software Engineering (ESEC/FSE).
- Jul 2017 “Adding Concurrency to Smart Contracts”, Symposium on Principles of Distributed Computing (PODC), Washington, DC
- Jun 2017 “Decomposition Instead of Self-Composition for Proving the Absence of Timing Channels”, Programming Language Design and Implementation (PLDI), Universitat Politècnica de Catalunya, Barcelona, Spain
- Jun 2017 “Decomposition Instead of Self-Composition for Proving the Absence of Timing Channels”, New England Programming Languages and Systems Symposium (NEPLS), University of Massachusetts, Lowell, MA
- Apr 2017 Invited Talk: “Adding Concurrency to Smart Contracts”, Shanghai Jiao Tong University, Shanghai, China
- Mar 2017 “Enabling Variability-Aware Software Tools” Feature-Oriented Software Development Conference (FOSD), Technische Universität Darmstadt, Darmstadt, Germany
- Sep 2016 “Tackling Variability Bugs”, NJ Programming Languages and Systems Seminar (NJ-PLS), Rutgers University, NJ
- Jan 2016 Invited Talk: “Enabling Variability-Aware Software Tools”, Carnegie Mellon University Institute for Software Research, Pittsburgh, PA
- Nov 2015 “Enabling Variability-Aware Software Tools”, IBM Programming Languages Day, Yorktown Heights, NY
- Jun 2012 “Parsing All of C by Taming the Preprocessor”, Programming Language Design and Implementation (PLDI), Beijing, China
- May 2006 “GraphicML: A Markup Language for Describing Charts”, John W. Tukey Seminar on Data Preparation and Presentation, ETS, Princeton, NJ

Kconfig Case Studies We developed case studies of systems software that use the Kconfig and Kbuild configuration and build management tools. This includes thousands of validated configuration samples; tools to run Kmax, Kclause, and various bug-finders on them; a variability-bug finding simulation framework; and resulting data (ESEC/FSE 2019, TR 2019, TR 2018).

Klocalizer We designed and built a tool to report all configurations leading to a given C file in software using Kconfig/Kbuild.

Kclause We designed and built a tool to compile Kconfig specifications into the DIMACS format and to Z3 expressions (TR 2018, TR 2019).

Kmax I designed and built a static analyzer for Kbuild Makefiles that collects symbolic configurations from the Linux build system (NYU TR 2015, ESEC/FSE 2017).

Concurrent smart contracts We created a prototype implementation with benchmarks (PODC 2017).

Proust A boosting library implemented on top of ScalaSTM. I made minor contributions to the library, but built the smart contract implementation for PODC '17 on top of it.

Blazer We created and implemented static analyses for finding complexity and side-channel attacks (PLDI 2017).

RAO I built a prototype implementation of the transactional universal construction for Reversible Atomic Objects (Yale TR 2016).

Courgette I contributed to Google Chrome's unique compression algorithm for enabling smaller software updates (Google Internship 2013).

SuperC I designed and built a framework for configuration-preserving preprocessing and parsing with an implementation for C (PLDI 2012).

GraphicML I designed an intermediate language for data graphics and built a translation tool to generate charts as vector graphics (ETS 2000-2008).

NAEP Questions Tool I was the lead developer and version 2 architect (ETS 2000-2008).

— Service and Outreach —

Reviewing Activities for Journals

- 2020 Journal Reviewer, Empirical Software Engineering
- 2019 Journal Reviewer, Science of Computer Programming
- 2019 Journal Reviewer, Transactions on Mobile Computing (TMC)
- 2017 Journal Reviewer, Science of Computer Programming
- 2016 Journal Reviewer, ACM Transactions on Parallel Computing (TOPC)

Reviewing Activities for Funding Agencies

- 2020 Panelist, National Science Foundation (NSF)
- 2019 Panelist, National Science Foundation (NSF)
- 2017 Proposal Reviewer, Netherlands Organisation for Scientific Research (NWO)

Reviewing Activities for Conferences

- PLDI 2021 Program Committee, Programming Language Design and Implementation

- MODEVAR 2020 Program Committee, Workshop on Languages for Modelling Variability
- MODEVAR 2019 Program Committee, Workshop on Languages for Modelling Variability
- SPLC-CC 2018 Program Committee, Systems and Software Product Line Conference, Challenge Track
- OOPLSA 2018 Artifact Evaluation Committee, Object-Oriented Programming, Systems, Languages & Applications
- POPL 2018 Artifact Evaluation Committee, Principles of Programming Languages

Organizing Activities for Conferences

- CCS 2020 Virtual Conference Task Force Chair, ACM Computer and Communications Security
- SPLC 2020 Proceedings Chair, Systems and Software Product Line Conference

Campus Service

- 2019-Now Committee Member, Cyber Security and Privacy Research Cluster Hiring Committee, University of Central Florida
- 2019-Now Technical Advisor, Hack@UCF, University of Central Florida
- 2019-Now Committee Member, Cyber Innovation Lab Committee, University of Central Florida
- 2019 Burnett Honors College Research Match Day, University of Central Florida
- 2018-Now Organizer, APPLeSEEd Lab Undergraduate Research Interest Meetings, University of Central Florida
- 2019 Faculty Representative, National Merit Scholar Reception, University of Central Florida

Community Outreach

- 2019 “What Is Inside My Computer?” with students Julian Braha, Kai Garcia, Jacob Thomas, and Connor Westcott, STEM Day, University of Central Florida
- 2019 Coordinator for the Computer Science Department, STEM Day, University of Central Florida
- 2019 Computer Science Sessions, Camp Connect II, University of Central Florida
- 2019 Computer Science Sessions, Camp Connect I, University of Central Florida

Service As a Student

- 2017 Panel Member, MSCS & MSIS Alumni Q&A Panel, New York University
- 2015 Panel Member, MSCS & MSIS Alumni Q&A Panel, New York University
- 2013 PhD Student Representative, Computer Science Department, New York University
- 2009-2012 Teacher, cSplash one-day festival of Math and CS, New York University
- 2009-2010 Volunteer, Women in Computing’s High School Girls’ CS/Engineering Colloquium
- 2010 President, NYU Master’s Association of Computer Science
- 2009 Treasurer, NYU Master’s Association of Computer Science
- 2009 Department Representative, NYU Graduate School Open House

Professional Memberships

- 2009-Now Professional Member, Association for Computing Machinery
- 2014-Now Associate Member, Free Software Foundation
- 2014-Now Sustaining Member, Electronic Frontier Foundation

References

Michael Hicks
Professor
University of Maryland, College Park
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Thomas Wies
Associate Professor
New York University
wies@cs.nyu.edu

Benjamin Goldberg
Associate Professor
New York University
goldberg@benjamingoldberg.com

Maurice Herlihy
Professor
Brown University
maurice.herlihy@gmail.com