JOSHUA GARCIA

University of California, Irvine
Donald Bren School of Information and Computer Sciences
Department of Informatics
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Research Interests

My research interests are in software engineering with a focus on software security, software analysis and testing, software architecture, and software maintenance and re-engineering.

Education

Ph.D., Computer Science, August 2014
University of Southern California
Los Angeles, CA, U.S.A.
Dissertation: A Unified Framework for Studying Architectural Decay of Software Systems

Master of Science, Computer Science, December 2008
University of Southern California
Los Angeles, CA, U.S.A.

Bachelor of Science in Computer Engineering and Computer Science, Minor in Philosophy, May 2006
University of Southern California
Los Angeles, CA, U.S.A.

Employment History

University of California, Irvine, USA
July 2018–Present	**Assistant Professor**	Department of Informatics

University of California, Irvine, USA
July 2015–June 2018	**Postdoctoral Associate**	Institute for Software Research

George Mason University, Fairfax, VA, USA
July 2014–June 2015	**Postdoctoral Research Fellow**	Software Design and Analysis Laboratory

University of Southern California, Los Angeles, CA, USA
January 2008–June 2014	**Research Assistant**	Software Architecture Research Group
May 2007–August 2007	**Research Assistant**	Southern California Earthquake Center
May 2005–May 2006	**Research Intern**	Southern California Earthquake Center

NASA Jet Propulsion Laboratory, La Cañada Flintridge, CA, USA
June 2009–August 2010	**Software Engineer**

Xerox Special Information Systems, Monrovia, CA, USA
June 2006–August 2006	**Software Development Intern**

Threshold Marketing, Los Angeles, CA, USA
August 2004–April 2005	**Software Development Intern**

Digital Computing Systems, LLC, Van Nuys, CA, USA
May 2003–August 2003	**IT Consultant**

Notre Dame High School, Sherman Oaks, CA, USA
June 2001–September 2002	**Assistant Network Admin**

Toy Mandala (Collectible Items Store), Sherman Oaks, CA, USA
    April 2002–August 2002   **Webmaster and Ad Designer**

Publications

Book Chapter
[BC1] Sam Malek, Hamid Bagheri, Joshua Garcia, Alireza Sadeghi. (2019) Security and Software Engineering. In: Kang, K., Taylor, R., and Cha, S., (eds) *Handbook of Software Engineering*. Springer.

Journals
[J9] Joshua Garcia, Mahmoud Hammad, and Sam Malek. Lightweight, Obfuscation-Resilient Detection and Family Identification of Android Malware. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, vol. 26, issue 3, no. 11, January 2018.

[J8] Thibaud Lutellier, Devin Chollak, Joshua Garcia, Lin Tan, Derek Rayside, Nenad Medvidovic, and Robert Kroeger. Measuring the Impact of Code Dependencies on Software Architecture Recovery Techniques. *IEEE Transactions on Software Engineering (TSE)*, vol. PP, issue 99, February 2017.

[J7] Alireza Sadeghi, Hamid Bagheri, Joshua Garcia, and Sam Malek. A Taxonomy and Qualitative Comparison of Program Analysis Techniques for Security Assessment of Android Software. *IEEE Transactions on Software Engineering (TSE)*, vol. 43, no. 6, pp. 492–530, June 2017.

[J6] Pooyan Behnamghader, Duc Minh Le, Joshua Garcia, Daniel Link, Arman Shahbazian, and Nenad Medvidović. A Large-Scale Study of Architectural Evolution in Open-Source Software Systems. *Empirical Software Engineering*, vol. 22, no. 3, pp. 1146–1193, June 2016.

[J5] Hamid Bagheri, Joshua Garcia, Alireza Sadeghi, Sam Malek, Nenad Medvidović. Software Architectural Principles in Contemporary Mobile Software: From Conception to Practice. *Journal of Systems and Software (JSS)*, vol. 119, pp. 31–44, September 2016.

[J4] Hamid Bagheri, Alireza Sadeghi, Joshua Garcia, and Sam Malek. COVERT: Compositional Analysis of Android Inter-App Permission Leakage. *IEEE Transactions on Software Engineering (TSE)*, vol. 41, no. 9, pp. 866–886, September 2015.

[J3] Chris A. Mattmann, Joshua Garcia, Ivo Krka, Daniel Popescu, and Nenad Medvidović. Revisiting the Anatomy and Physiology of the Grid. *Journal of Grid Computing*, vol. 13, no. 1, pp. 19–34, January 2015

[J2] Nenad Medvidović, Hossein Tajalli, Joshua Garcia, Yuriy Brun, Ivo Krka, and George Edwards. Engineering Heterogeneous Robotics Systems: A Software Architecture-Based Approach, *IEEE Computer*, vol. 44, no.5, pp. 62–71, May 2011.

[J1] Sam Malek, George Edwards, Yuriy Brun, Hossein Tajalli, Joshua Garcia, Ivo Krka, Nenad Medvidović, Marija Mikic-Rakic, and Gaurav Sukhatme. An Architecture-Driven Software Mobility Framework. *Journal of Systems and Software (JSS), Special Issue on Software Architecture and Mobility*, vol. 83, no. 6, pp. 972–989, June 2010.

Conferences
[C17] Joshua Garcia, Yang Feng, Junjie Shen, Sumaya Almanee, Yuan Xia, and Qi Alfred Chen. A Comprehensive Study of Autonomous Vehicle Bugs. *In the 42nd International Conference on Software Engineering (ICSE 2020)*, Seoul, South Korea, May 2020.

[C16] Negar Ghorbani, Joshua Garcia, and Sam Malek. Detection and Repair of Architectural Inconsistencies in Java. *In the 41st International Conference on Software Engineering (ICSE 2019)*, Montreal, Canada, May 2019.

[C15] Mahmoud Hammad, Joshua Garcia and Sam Malek. SALMA: Self-Protection of Android Systems from Inter-Component Communication Attacks. *In the 33rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2018)*, Montpellier, France, September 2018.

[C14] Mahmoud Hammad, Joshua Garcia and Sam Malek. A Large-Scale Empirical Study on the Effects of Code Obfuscations on Android Apps and Anti-Malware Products. *In the 40th International Conference on Software Engineering (ICSE)*, Gothenburg, Sweden, May 2018.

[C13] Jun-Wei Lin, Reyhaneh Jabbarvand, Joshua Garcia and Sam Malek. Nemo: Multi-Criteria Test-Suite Minimization with Integer Nonlinear Programming. *In the 40th International Conference on Software Engineering (ICSE)*, Gothenburg, Sweden, May 2018.

[C12] Joshua Garcia, Mahmoud Hammad, Negar Ghorbani, and Sam Malek. Automatic Generation of Inter-Component Communication Exploits for Android Applications. *In the 11th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, Paderborn, Germany, September 2017.

[C11] Nariman Mirzaei, Joshua Garcia, Hamid Bagheri, Alireza Sadeghi, and Sam Malek. Reducing Combinatorics in GUI Testing of Android Applications. *In the 38th International Conference on Software Engineering (ICSE)*, Austin, Texas, May 2016.

[C10] Duc Le, Pooyan Behnamghader, Joshua Garcia, Daniel Link, Arman Shahbazian and Nenad Medvidović. An Empirical Study of Architectural Change in Open-Source Software Systems. *In the 12th Working Conference on Mining Software Repositories (MSR)*, Florence, Italy, May 2015.

[C9] Thibaud Lutellier, Devin Chollack, Joshua Garcia, Lin Tan, Derek Rayside, Nenad Medvidović and Robert Kroeger. Comparing Software Architecture Recovery Techniques Using Accurate Dependencies. *In the 37th International Conference on Software Engineering (ICSE), Software Engineering In Practice Track*, Florence, Italy, May 2015.

[C8] Joshua Garcia, Igor Ivkovic, and Nenad Medvidović. A Comparative Analysis of Architecture Recovery Techniques. *In the Proceedings of the 28th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Palo Alto, California, November 2013.

[C7] Joshua Garcia, Daniel Popescu, Gholamreza Safi, William G.J. Halfond, and Nenad Medvidović. Identifying Message Flow in Distributed Event-Based Systems. *In the Proceedings of the 9th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, Saint Petersburg, Russia, August 2013.

[C6] Joshua Garcia, Ivo Krka, Chris Mattmann, and Nenad Medvidović. Obtaining Ground-Truth Software Architectures. *In the 35th International Conference on Software Engineering (ICSE), Software Engineering In Practice Track*, San Francisco, California, May 2013.

[C5] Daniel Popescu, Joshua Garcia, Kevin Bierhoff, and Nenad Medvidović. Impact Analysis for Distributed Event-Based Systems. *In the Proceedings of the 6th ACM International Conference on Distributed Event-Based Systems (DEBS)*, Berlin, Germany, July 2012.

[C4] Isela Macia Bertrán, Joshua Garcia, Daniel Popescu, Alessandro Garcia, Nenad Medvidović and Arndt Von Staa. Are Automatically-Detected Code Anomalies Relevant to Architectural Modularity? An Exploratory Analysis of Evolving Systems. *In the Proceedings of the 11th Annual International Conference on Aspect-oriented Software Development (AOSD)*, Hasso-Plattner-Institut Potsdam, Germany, March 2012.

[C3] Isela Macia, Alessandro Garcia, Arndt von Staa, Joshua Garcia, and Nenad Medvidović. On the Impact of Aspect-Oriented Code Smells on Architecture Modularity: An Exploratory Study. *In the Proceedings of the 5th Brazilian Symposium on Software Components, Architectures and Reuse (SBCARS)*, São Paulo, Brazil, September 2011.

[C2] Hossein Tajalli, Joshua Garcia, George Edwards, and Nenad Medvidović. PLASMA: A Plan-Based Layered Architecture for Software Model-Driven Adaptation. *In the Proceedings of the 25th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Antwerp, Belgium, September 2010.

[C1] Joshua Garcia, Daniel Popescu, George Edwards and Nenad Medvidović. Toward a Catalogue of Architectural Bad Smells. *In the Proceedings of the Fifth International Conference on the Quality of Software Architectures (QOSA)*, East Stroudsburg, Pennsylvania, June 2009.

Workshops and Short Papers

[W10] Reyhaneh Jabbarvand, Alireza Sadeghi, Joshua Garcia, Sam Malek, and Paul Ammann. EcoDroid: An Approach for Energy-Based Ranking of Android Apps. *In the 4th International Workshop on Green and Sustainable Software in Conjunction with ICSE*, Florence, Italy, May 2015.

[W9] Youn Kyu Lee, Jae young Bang, Joshua Garcia, and Nenad Medvidović. ViVA: A Visualization and Analysis Tool for Distributed Event-Based Systems. *36th International Conference on Software Engineering (ICSE), Formal Demonstrations Track*, Hyderabad, India, June 2014.

[W8] Ran Mo, Joshua Garcia, Yuanfang Cai, and Nenad Medvidović. Mapping Architectural Decay Instances into Dependency Models. *In the Proceedings of the Fourth International Workshop on Managing Technical Debt in Conjunction with ICSE*, San Francisco, California, May 2013.

[W7] Joshua Garcia, Ivo Krka, Nenad Medvidović, and Chris Douglas. A Framework for Obtaining the Ground-Truth in Architectural Recovery. *In the joint 10th Working IEEE/IFIP Conference on Software Architecture & 6th European Conference on Software Architecture (WICSA/ECSA)*, Helsinki, Finland, August 2012.

[W6] Joshua Garcia, Daniel Popescu, Chris Mattmann, Nenad Medvidović, and Yuanfang Cai. Enhancing Architectural Recovery Using Concerns. *In the Proceedings of the 26th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Lawrence, Kansas, November 2011.

[W5] Ivo Krka, Yuriy Brun, Daniel Popescu, Joshua Garcia, Nenad Medvidović. Using Dynamic Execution Traces and Program Invariants to Enhance Behavioral Model Inference. *In the 32nd International Conference on Software Engineering (ICSE), New Ideas and Emerging Results Track*, Cape Town, South Africa, May 2010.

[W4] George Edwards, Joshua Garcia, Hossein Tajalli, Daniel Popescu, Nenad Medvidović, Gaurav Sukhatme, and Brad Petrus. Architecture-Driven Self-Adaptation and Self-Management in Robotics Systems. *In the Proceedings of the Workshop on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*, Vancouver, Canada, May 2009.

[W3] Daniel Popescu, Joshua Garcia, and Nenad Medvidović. Enabling More Precise Dependency Analysis in Event-Based Systems. *In the Proceedings of the 17th International Conference on Program Comprehension (ICPC)*, Vancouver, Canada, May 2009.

[W2] Joshua Garcia, Daniel Popescu, George Edwards and Nenad Medvidović, Identifying Architectural Bad Smells. *In the Proceedings of the 13th European Conference on Software Maintenance and Reengineering (CSMR)*, Kaiserslautern, Germany, March 2009.

[W1] Chris A. Mattmann, Joshua Garcia, Ivo Krka, Daniel Popescu, and Nenad Medvidović. The Anatomy and Physiology of the Grid Revisited. *In the Proceedings of the 8th Working IEEE/IFIP Conference on Software Architecture (WICSA)*, Cambridge, United Kingdom, September 2009.

Research Grants and Contracts

[F2] National Science Foundation (NSF)
"Constructing a Community-Wide Software Architecture Infrastructure"
Duration: 7/1/2018—6/30/2021
Investigators: Sam Malek (PI at University of California, Irvine), Joshua Garcia (Co-PI at University of California, Irvine), Nenad Medvidović (Lead PI at University of Southern California), Mehdi Mirakhorli (PI at Rochester Institute of Technology), Rick Kazman (PI at University of Hawai'i at Mānoa), Yuanfang Cai (PI at Drexel University), and Lu Xiao (PI at Stevens Institute of Technology)
Award Amount: $1,660,000 (Current)

[F1] National Science Foundation (NSF)
"Planning and Prototyping a Community-Wide Software Architecture Instrument"
Duration: 8/8/2016—7/31/2018
Investigators: Sam Malek (PI at UCI), Joshua Garcia (Co-PI at UCI), Nenad Medvidović (Lead PI at University of Southern California), and Mehdi Mirakhorli (PI at Rochester Institute of Technology)
Award Amount: $130,000 (Past)

Formal Presentations

[P37] *Android Malware Detection: From Obfuscation Susceptibility to Obfuscation Resilience*, NortonLifeLock, Culver City, CA, March 2020.

[P36] *Detection and Repair of Architectural Inconsistencies in Java*. In the 41st International Conference on Software Engineering (ICSE), Montreal, Canada, May 2019.

[P35] *Lightweight, Obfuscation-Resilient Detection and Family Identification of Android Malware*. In the 40th International Conference on Software Engineering (ICSE), Gothenburg, Sweden, May 2018.

[P34] *A Large-Scale Empirical Study on the Effects of Code Obfuscations on Android Apps and Anti-Malware Products*. In the 40th International Conference on Software Engineering (ICSE), Gothenburg, Sweden, May 2018.

[P33] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. McGill University, Montreal, Quebec, Canada, April 2018.

[P32] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. McGill University, Montreal, Quebec, Canada, April 2018.

[P31] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. Arizona State University, Tempe, Arizona, April 2018.

[P30] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Texas at Dallas, Richardson, Texas, March 2018.

[P29] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. Northeastern University, Boston, Massachusetts, March 2018.

[P28] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Victoria, Victoria, British Columbia, Canada, March 2018.

[P27] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Waterloo, Waterloo, Ontario, Canada, March 2018.

[P26] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of California, Irvine, February 2018.

[P25] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Utah, Salt Lake City, Utah, February 2018.

[P24] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Maryland, College Park, February 2018.

[P23] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Notre Dame, South Bend, Indiana, February 2018.

[P22] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of California, Davis, January 2018.

[P21] *Automated Android Security Assessment: Malware, Vulnerabilities, and Exploits*. University of Southern California, Los Angeles, CA, January 2018.

[P20] *Automatic Generation of Inter-Component Communication Exploits for Android Applications*. Intelligence Community (IC) Academic Research Symposium, Washington, D.C., September 2017.

[P19] *Automatic Generation of Inter-Component Communication Exploits for Android Applications*. 11th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Paderborn, Germany, September 2017.

[P18] *Automatic Generation of Inter-Component Communication Exploits for Android Applications*. Institute for Software Research (ISR) Research Forum, University of California, Irvine, June. 2017.

[P17] *A Taxonomy and Qualitative Comparison of Program Analysis Techniques for Security Assessment of Android Software*. 39th International Conference on Software Engineering, Buenos Aires, Argentina, May 2017.

[P16] *Lightweight, Obfuscation-Resilient Detection and Family Identification of Android Malware*. IEEE Orange County CyberSecurity Monthly Technical Talk, Tustin, California, September 2016.

[P15] *Effective, Lightweight Analysis of Android Apps: A Security and Testing Perspective*. Aerospace Corporation, El Segundo, California, July 2016.

[P14] *Reducing Combinatorics in GUI Testing of Android Applications*. 38th International Conference on Software Engineering (ICSE), Austin, Texas, May 2016.

[P13] *A Comparative Analysis of Architecture Recovery Techniques*. 28th IEEE/ACM International Conference on Automated Software Engineering (ASE), Palo Alto, California, November 2013.

[P12] *Identifying Message Flow in Distributed Event-Based Systems*. 9th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Saint Petersburg, Russia, August 2013.

[P11] *Obtaining Ground-Truth Software Architectures. Software Engineering In Practice Track of the 35th International Conference on Software Engineering (ICSE)*, San Francisco, California, May 2013.

[P10] *A Framework for Obtaining the Ground-Truth in Architectural Recovery*. 10th joint Working IEEE/IFIP Conference on Software Architecture & 6th European Conference on Software Architecture (WICSA/ECSA), Helsinki, Finland, August 2012.

[P9] *Architectural Recovery to Aid Detection of Architectural Degradation*. USC Center for Software and Systems Engineering Annual Research Review, Los Angeles, California, March 2012.

[P8] *Enhancing Architectural Recovery Using Concerns*. 26th IEEE/ACM International Conference on Automated Software Engineering (ASE), Lawrence, Kansas, November 2011.

[P7] *Cataloging and Detecting Architectural Smells*. USC Center for Software and Systems Engineering Annual Research Review, Los Angeles, California, March 2011.

[P6] *Cataloging and Detecting Architectural Smells*. Ground Systems Architecture Workshop (GSAW), Architecture-Centric Evolution (ACE) Working Group, Los Angeles, California, March 2011.

[P5] *Model- and Plan-Based Software Architecture Adaptation*. USC Center for Software and Systems Engineering Annual Research Review, Los Angeles, California, March 2010.

[P4] *The Anatomy and Physiology of the Grid Revisited*. 8th Working IEEE/IFIP Conference on Software Architecture (WICSA), Cambridge, United Kingdom, September 2009.

[P3] *Toward a Catalogue of Architectural Bad Smells*. 5th International Conference on the Quality of Software Architectures (QOSA), East Stroudsburg, Pennsylvania, June 2009.

[P2] *Architecture-Driven Self-Adaptation and Self-Management in Robotics Systems*. USC Center for Software and Systems Engineering Annual Research Review, Los Angeles, California, March 2009.

[P1] *An Architectural Approach to Robotics Software Design, Implementation, and Deployment*. USC Center for Software and Systems Engineering Annual Research Review, Los Angeles, California, March 2008.

Service Activities

Organization
- Co-Organizer, The Celebration of Automated Software Engineering at ASE 2019.
- Co-Chair, Early Career Researchers Forum at the IEEE International Conference on Software Architecture (ICSA ECRF 2020).
- Program Co-Chair, International Workshop on Establishing the Community-Wide Infrastructure for Architecture-Based Software Engineering (ECASE 2019), Montreal, Canada, May 2019.
- Co-Organizer, NSF Sponsored Workshop on Infrastructures and Instruments for Software Architecture (REINFORCE), co-located with the International Conference on Automated Software Engineering, Urbana-Champaign, Illinois, October 2017.
- Program Co-Chair, International Workshop on Establishing the Community-Wide Infrastructure for Architecture-Based Software Engineering (ECASE 2017), Buenos Aires, Argentina, May 2017.
- Co-Organizer, NSF Sponsored Workshop on Infrastructures and Instruments for Software Architecture (REINFORCE), Los Angeles, California, January 2017.

Program Committee
- The 43rd International Conference on Software Engineering (ICSE), Technical Track, 2021.
- The 35th IEEE/ACM International Conference on Automated Software Engineering (ASE), Technical Track, 2020.
- The Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Research Track, 2020.
- IEEE International Conference on Software Architecture (ICSA), 2020.
- The International Conference on Software Engineering (ICSE), Poster Track, 2020.
- The 34th IEEE/ACM International Conference on Automated Software Engineering (ASE), Technical Track, 2019.
- International Conference on Automated Software Engineering, Research Track, 2019.
- IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), Tool Demo Track, 2019.
- The International Conference on Software Engineering (ICSE), Artifact Evaluation, 2019.
- The International Conference on Software Engineering (ICSE), Demonstrations Track, 2016.
- Innovations in Software Engineering Conference (ISEC), 2017-2019.

Reviewer
- IEEE Transactions on Software Engineering (TSE) Review Board, 2018-2020.
- IEEE Transactions on Software Engineering (TSE), 2013-2020.
- ACM Transactions on Software Engineering and Methodology (TOSEM), 2014-2020.
- Empirical Software Engineering Journal, 2017-2020.
- Automated Software Engineering Journal, 2019.
- International Conference on Learning Representations (ICLR 2019).
- IEEE Software, 2017-2018.
- IEEE Transactions on Mobile Computing (TMC), 2018.
- IEEE Transactions on Dependable and Secure Computing (TDSC), 2018.
- ACM Transactions on Autonomous and Adaptive Systems (TAAS), 2018.
- Information and Software Technology (IST), 2015-2016.
- Journal of Systems and Software (JSS), 2015-2018.
- Science of Computer Programming, Special Issue: CompArch 2012.
- Computing, 2017-2018.
- CIT. Journal of Computing and Information Technology, 2018-2019.

External Reviewer
- The European Conference on Software Architecture (ECSA), 2013-2018.
- IEEE/ACM International Conference on Automated Software Engineering (ASE), 2013.
- The Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), 2013.
- The ACM International Conference on Distributed Event-Based Systems (DEBS), 2013.
- The International ACM SIGSOFT Symposium on Component-Based Software Engineering (CBSE), 2013.
- The International ACM SIGSOFT Symposium on Architecting Critical Systems (ISARCS), 2013.
- The International Conference on Distributed Event-Based Systems (DEBS), 2012.
- The International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), 2012.
- The International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), 2011. The Workshop on Software Engineering for Adaptive and
- Self-Managing Systems (SEAMS 2010), May 2010.
- The First International Workshop on Quantitative Stochastic Models in the Verification and Design of Software Systems (QUOVADIS), May 2010.
- The IEEE/ACM International Conference on Automated Software Engineering (ASE), 2009.
- The DSN 2009 Workshop on Architecting Dependable Systems (WADS), June 29, 2009.
- The International Conference on Autonomic Computing and Communications (ICAC 2009), June 2009.
- The International Workshop on the Foundations of Coordination Languages and Software Architectures (FOCLASA), 2008.

University Service
- Member, Graduate Fellowship Committee, Department of Informatics, Donald Bren School of Information and Computer Sciences, 2018-2019.
- Chair, Software-Engineering Graduate Admissions Committee, Department of Informatics, Donald Bren School of Information and Computer Sciences, 2018-2019.
- Panel Member, Improving Your Graduate School Application, Donald Bren School of Information and Computer Sciences, 2018-2019.

Webmaster
- The International ACM SIGSOFT Symposium on Component Based Software Engineering (CBSE), 2011.

Teaching Experience

Lecturer
- University of California, Irvine, SWE266P, **Software Security and Dependability**, Spring 2020
- University of California, Irvine, INF122, **Software Design: Structure and Implementation**, Winter 2019

- University of California, Irvine, INF219, **Program Analysis**, Fall 2020
- University of California, Irvine, INF219, **Program Analysis**, Spring 2019
- University of California, Irvine, INF122, **Software Design: Structure and Implementation**, Winter 2019
- University of California, Irvine, INF219, **Software Environments**, Spring 2016

Teaching Assistantships
- University of Southern California, CSCI578, **Software Architecture**, Spring 2011
- University of Southern California, CSCI499, **Introduction to Programming for Computer Scientists**, Fall 2010
- University of Southern California, CSCI588, **Specification and Design of User Interface Software**, Fall 2010
- University of Southern California, CSCI578, **Software Architecture**, Spring 2008
- University of Southern California, CSCI101, **Fundamentals of Computer Programming**, Fall 2007

Guest Lecturer
- University of California, Irvine, CS295, **Advanced Computer and Network Security**, Spring 2020
- University of California, Irvine, CS295, **Advanced Computer and Network Security**, Spring 2019
- University of California, Irvine, INF133, **User Interaction Software**, Fall 2019
- University of California, Irvine, ICS90, **New Student Seminar**, Fall 2018
- University of California, Irvine, INF211, **Software Engineering**, Fall 2018
- University of California, Irvine, INF221, **Software Architecture**, Fall 2017
- University of California, Irvine, INF221, **Software Architecture**, Fall 2016
- University of Southern California, CSCI578, **Software Architecture**, Spring 2011
- University of Southern California, CSCI588, **Specification and Design of User Interface Software**, Fall 2010

Supervised or Mentored Students and Researchers

Doctoral Dissertation Committee Chair
- Negar Ghorbani (as PhD co-advisor, co-advised with Sam Malek),
  Status: Advanced to Candidacy
- Sumaya Almanee (as PhD advisor),
  Advanced to Candidacy
- Arda Unal (as PhD advisor),
  Status: Started Spring 2020

Doctoral Dissertation Committee Member
- Alexios Voulimeneas, Advisor: Michael Franz, UCI, 2020
- Hsin-Wei Hung, Advisor: Ardalan Amiri Sani, UCI, 2020
- Junjie Shen, Advisor: Qi Alfred Chen, UCI, 2020–
- Luke Fredericks, Advisor: Nathan Kaplan, UCI, 2018–
- Seyed Mohammadjavad Seyed Talebi, Advisor: Ardalan Amiri Sani, UCI, 2019–
- Yingtong Liu, Advisor: Ardalan Amiri Sani, UCI, 2019–
- Dalal Alharthi, Advisor: Amelia Regan, 2019–
- Milad Asgari, Advisor: Athina Markopoulou, 2019–

Master's Thesis Students Supervised
- Faraz Yazdani, Advisor: Sam Malek, UCI, 2020
- Pritha Dawn, Advisor: Crista Lopes, UCI, 2020
- Jun Yeon Won, Advisor: Qi Alfred Chen, UCI, 2019

Students Supervised as a Postdoc (2014-2018)
- Mahmoud Hammad (PhD, UCI)
- Alireza Sadhegi (PhD, UCI)
- Reyhaneh Jabbarvand (PhD, UCI)
- Negar Ghorbani (PhD, UCI)
- Jun-Wei Lin (PhD, UCI)

- Nariman Mirzaei (PhD, GMU)
- Ehsan Kouroshfar (PhD, GMU)
- Riyadh Mahmoud (PhD, GMU)

Students Mentored at USC as a Ph.D. Student (2008-2014)
- Youn Kyu Lee (PhD)
- Gholamreza Safi (PhD)
- Duc Le (PhD)
- Arman Shahbazian (PhD)
- Pooyan Behnamghader (PhD)
- Bassel Haddad (Masters)
- Anita Singh (Undergraduate)

Publicly Available Software and Datasets

- Dataset from A Comprehensive Study of Autonomous Vehicle bugs.
  `https://sites.google.com/view/av-bug-study/home` (from [C17])
- Darcy: a tool that detects and repairs architectural inconsistencies in the Java Platform Module System.
  `https://sites.google.com/view/darcy-project/home` (from [C16])
- RevealDroid: a tool suite for detection of malicious Android apps and identification of a malicious app's family. Users include FBI; Department of Homeland Security; and Zimperium, a mobile threat defense company. `http://seal.ics.uci.edu/projects/revealdroid/index.html` (from [J9])
- LetterBomb: a framework for automatic generation of inter-component communication exploits for Android apps. Users include FBI and IBM.
  `http://seal.ics.uci.edu/projects/letterbomb/index.html` (from [C12])
- SALMA: Self-Protection of Android Systems from Inter-Component Communication Attacks [C15]
  `http://seal.ics.uci.edu/projects/salma/index.html`
- Classification of Android security analysis papers from [C7]
  `http://seal.ics.uci.edu/projects/droid-sec-taxonomy/index.html`
- Obfuscation framework and datasets from [C14]
  `http://seal.ics.uci.edu/projects/obfuscation/index.html`
- COVERT: an approach for identifying collections of Android apps that together combine their permissions to escalate privileges. (from [J4]) `http://seal.ics.uci.edu/projects/covert/index.html`
- Architectural Recovery using Concerns (ARC): an approach for recovery of the components of a software systems architecture that leverages topic models. Users include Huawei, Northrup Grumman, and Boeing. (from [C6], [C8], [C10], [J6]) `https://softarch.usc.edu/wiki/doku.php?id=arcade:start`
- Architecture Recovery, Change, And Decay Evaluator (ARCADE): a software workbench that employs a suite of architecture-recovery techniques and a set of metrics for measuring different aspects of architectural change. Users include Huawei, Northrup Grumman, and Boeing. (from [C10] and [J6]) `https://softarch.usc.edu/wiki/doku.php?id=arcade:start`
- Eos: a tool for identifying messages, inter-component dependencies based on messages, intra-component dependencies based on messages, and attributes of a message in a distributed event-based system. (from [C7])
  `https://softarch.usc.edu/projects/automated-recovery-of-software-system-designs/`
  `https://softarch.usc.edu/wiki/doku.php?id=mfa:start`
- Ground-Truth Software Architectures: architectures recovered with the aid of a software system's architect or long-time architecturally aware developer.
  - Includes Apache Hadoop, Bash (Bourne Again Shell), Apache OODT, and ArchStudio. (from [C6])
    `https://softarch.usc.edu/wiki/doku.php?id=recoveries:start`
  - Includes Google Chromium. (from [C9] and [J8]) `http://asset.uwaterloo.ca/ArchRecovery/`
- Apache Object Oriented Data Technology (OODT) (as an Apache Committer): a framework for large-scale distributed data management and processing. Users include NASA, DARPA, and National Cancer Institute. `https://oodt.apache.org/`

Other Contributions

- 2011 NSF Funding: Participated in writing grant proposal that led to funding of award 1117593.
- 2016 FBI Funding: Performed research tasks and participated in proposal writing that led to funding for third option year for Intelligence Community (IC) Postdoc Program.

Honors, Awards, and Selected Statistics

- Intelligence Community (IC) Postdoctoral Research Fellow, 2014–2017
- Award, USC School of Engineering Doctoral Fellowship, 2006–2010
- Award, Best Research Assistant Award, USC Computer Science Department, 2014
- Award, International Conference in Program Comprehension 2009, Best Poster Award
- Award, First Place, Special Interdisciplinary Award, USC Undergraduate Symposium for Scholarly and Creative Work, 2006
- Award, NSF Travel Grant for ICSE 2018
- Award, NSF Travel Grant for ICSE 2017
- Award, SIGSOFT CAPS Travel Grant for ICSE 2013
- Award, SIGSOFT CAPS Travel Grant for ICSE 2009
- Member, Association for Computing Machinery (ACM)
- Member, ACM Special Interest Group on Software Engineering (SIGSOFT)
- Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, Golden Key International Honors Society
- USC Renaissance Scholar
- h-index on Google Scholar (September 2019): 22