Hamid Bagheri

Postdoctoral Research Fellow

Institute for Software Research
University of California, Irvine
214 ICS2, Irvine, CA 92697
✉ *hamidb@uci.edu*
`http://www.ics.uci.edu/~hamidb/`

Research Interests

Software Engineering and Formal Methods, with a focus on advancing software security and reliability by developing new methods relying on concepts from fields like lightweight formal methods, software synthesis, model-driven development, and software architecture.

Education

2009–2013 **Ph.D. in Computer Science**, *University of Virginia*, Charlottesville, VA.
Advisor Kevin Sullivan
Thesis Synthesis From Relational Logic Abstractions, GPA: 4.0
2005–2008 **M.Sc. in Software Engineering**, *Sharif University of Technology*, Tehran, Iran.
2001–2005 **B.Sc. in Computer Engineering**, *University of Tehran*, Tehran, Iran.

Appointments

2015–present **Postdoctoral Research Fellow**, University of California, Irvine.
2014–2015 **Postdoctoral Research Fellow**, CSAIL, Massachusetts Institute of Technology and CS Department, George Mason University.
2013–2014 **Postdoctoral Research Fellow**, CS Department, George Mason University.

Peer-Reviewed Publications

Refereed Journal Articles

[J3] Hamid Bagheri, Alireza Sadeghi, Joshua Garcia and Sam Malek. COVERT: Compositional Analysis of Android Inter-App Permission Leakage. IEEE Transactions on Software Engineering **(IEEE TSE)**, Vol. 41, No. 9, pp. 866–886, September 2015. (This paper was nominated for the Journal First Paper.)
`http://doi.ieeecomputersociety.org/10.1109/TSE.2015.2419611`

[J2] Hamid Bagheri and Kevin Sullivan. Model-Driven Synthesis of Formally Precise Stylized Software Architectures. Journal of Formal Aspects of Computing **(Springer FAoC)**. (accepted)

[J1] Hamid Bagheri, Chong Tang, and Kevin Sullivan. Automated Synthesis and Dynamic Analysis of Tradeoff Spaces for Object-Relational Mapping. IEEE Transactions on Software Engineering **(IEEE TSE)**. (accepted with minor revision)

Refereed Conference Papers

[C19] Hamid Bagheri, Alireza Sadeghi, Reyhaneh Jabbarvand Behrouz and Sam Malek. Practical, Formal Synthesis and Automatic Enforcement of Security Policies for Android. Submitted to the IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN**), 2016. (acceptance rate: 20%)

[C18] Nariman Mirzaei, Joshua Garcia, Hamid Bagheri, Alireza Sadeghi and Sam Malek. Reducing Combinatorics in GUI Testing of Android Applications. To appear in Proceedings of the International Conference on Software Engineering **(ICSE 2016)**, Austin, TX, 2016. (acceptance rate: 19%)

[C17] Hamid Bagheri, Eunsuk Kang, Sam Malek, and Daniel Jackson. Detection of Design Flaws in Android Permission Protocol through Bounded Verification. In proceedings of the 20th International Symposium on Formal Methods **(FM 2015)**, Oslo, Norway, pp. 73–89, 2015. (acceptance rate: 26%) (This paper was invited for journal submission.) `http://dx.doi.org/10.1007/978-3-319-19249-9_6`

[C16] Ehsan Kouroshfar, Mehdi Mirakhorli, Hamid Bagheri, Lu Xiao, Sam Malek and Yuanfang Cai. A Study on the Role of Software Architecture in the Evolution and Quality of Software. In proceedings of the 12th Working Conference on Mining Software Repositories **(MSR 2015)**, Florence, Italy, pp. 246–257, 2015. (acceptance rate: 30%) `http://dl.acm.org/citation.cfm?id=2820548`

[C15] Nariman Mirzaei, Hamid Bagheri, Riyadh Mahmood, and Sam Malek. SIG-Droid: Automated System Input Generation for Android Applications. In proceedings of the 26th IEEE International Symposium on Software Reliability Engineering **(ISSRE 2015)**, Gaithersburg, MD, 2015. (acceptance rate: 19%) `http://issre.net/res_papers`

[C14] Hamid Bagheri, Chong Tang and Kevin Sullivan. TradeMaker: Automated Dynamic Analysis of Synthesized Tradespaces. In Proceedings of the International Conference on Software Engineering **(ICSE 2014)**, pp. 106–116, 2014. (acceptance rate: 20%) `http://doi.acm.org/10.1145/2568225.2568291`

[C13] Sam Malek, Hamid Bagheri and Alireza Sadeghi. Automated detection and mitigation of inter-application security vulnerabilities in Android. In Proceedings of the second international workshop on Software Development Lifecycle for Mobile, **(DeMobile 2014)**, Hong Kong, China, pp. 17–18, 2014. `http://doi.acm.org/10.1145/2661694.2661699`

[C12] Hamid Bagheri and Kevin Sullivan. Bottom-up Model-driven Development. In Proceedings of the International Conference on Software Engineering **(ICSE 2013)**, New Ideas and Emerging Results track, San Francisco, California, pp. 1221–1224, 2013. (acceptance rate: 22%) `http://dl.acm.org/citation.cfm?id=2486968`

[C11] Hamid Bagheri and Kevin Sullivan. Pol: Specification-Driven Synthesis of Architectural Code Frameworks for Platform-Based Applications. In Proceedings of the 11th ACM SIGPLAN International Conference on Generative Programming and Component Engineering **(GPCE 2012)**, Dresden, Germany, pp. 93–102. 2012. (acceptance rate: 34%) `http://dx.doi.org/10.1145/2480361.2371416`

[C10] Hamid Bagheri, Kevin Sullivan and Sang Son. Spacemaker: Practical formal synthesis of tradeoff spaces for object-relational mapping. In Proceedings of the 24th International Conference on Software Engineering and Knowledge Engineering **(SEKE 2012)**, San Francisco Bay, California, pp. 688–693, 2012. (acceptance rate: 27%) (This paper won the Distinguished Paper Award.)

[C9] Hamid Bagheri. A Formal Approach to Software Synthesis for Architectural Platforms. In Proceedings of the International Conference on Software Engineering **(ICSE 2011)**, ACM Student Research Competition track, Honolulu, HI, pp. 1143–1145, 2011. `http://doi.acm.org/10.1145/1985793.1986023`

[C8] Hamid Bagheri and Kevin Sullivan. A Formal Approach for Incorporating Architectural Tactics into the Software Architecture. In Proceedings of the 23rd International Conference on Software Engineering and Knowledge Engineering **(SEKE 2011)**, Miami, Florida, pp. 770–775, 2011. (acceptance rate: 33%)

[C7] Hamid Bagheri and Kevin Sullivan. Monarch: Model-based Development of Software Architectures, In Proceedings of the 13th ACM/IEEE International Conference on Model Driven Engineering Languages and Systems **(MoDELS 2010)**, Lecture Notes in Computer Science 6395, pp. 376–390, 2010. (acceptance rate: 20%) `http://dx.doi.org/10.1007/978-3-642-16129-2_27`

[C6] Hamid Bagheri, Yuanyuan Song and Kevin Sullivan. Architectural style as an Independent Variable. In Proceedings of the 25th IEEE/ACM International Conference on Automated Software Engineering **(ASE 2010)**, Antwerp, Belgium, pp. 159–162, 2010. `http://doi.acm.org/10.1145/1858996.1859026`

[C5] Hamid Bagheri and Kevin Sullivan. Towards a Systematic Approach for Software Synthesis. In Proceedings of the 3rd International Workshop On Model Based Architecting And Construction Of Embedded Systems **(ACES-MB 2010)**, Oslo, Norway, 2010.

[C4] Hamid Bagheri and Kevin Sullivan. Architecture as an Independent Variable for Aspect-Oriented Application Descriptions. In Proceedings of the international conference on Abstract State Machines, B and Z **(ABZ 2010)** (LNCS 5977), Canada, 2010. `http://dx.doi.org/10.1007/978-3-642-11811-1_32`

[C3] Hamid Bagheri, Vajih Montaghami, Gholamreza Safi and Seyed-Hassan Mirian-Hosseinabadi. An Evaluation Method for Aspectual Modeling of Distributed Software Architecture. In Proceedings of the 6th IEEE/ACS International Conference on Computer Systems and Applications **(AICCSA 2008)**, pp. 903–908, 2008. `http://doi.ieeecomputersociety.org/10.1109/AICCSA.2008.4493639`

[C2] Hamid Bagheri and Seyed-Hassan Mirian-Hosseinabadi. Injecting security as aspectable NFR into Software Architecture. In Proceedings of the 14th Asia-Pacific Software Engineering Conference **(APSEC 2007)**, Japan, pp. 310–317, 2007. (acceptance rate: 31%) `http://dx.doi.org/10.1109/APSEC.2007.65`

[C1] Hamid Bagheri, Seyed-Hassan Mirian-Hosseinabadi and Hesam Chiniforooshan Esfahani. An Aspect Enhanced Method of NFR Modeling in Software Architecture. In Proceedings of the 10th IEEE International Conference on Information Technology **(IEEECIT 2007)**, pp. 240–242, 2007. `http://doi.ieeecomputersociety.org/10.1109/ICIT.2007.23`

Manuscripts in Progress

[M2] Hamid Bagheri and Sam Malek. Titanium: Efficient Analysis of Evolving Alloy Specifications. Submitted to the ACM SIGSOFT International Symposium on Foundations of Software Engineering (FSE), 2016.

[M1] Hamid Bagheri, Joshua Garcia, Alireza Sadeghi, Sam Malek and Nenad Medvidovic. Software Architectural Principles in Contemporary Mobile Software: from Conception to Practice. Journal of Systems and Software (JSS), In preparation for resubmission after a major revision.

Technical Reports

[T4] Hamid Bagheri and Sam Malek. Titanium: Efficient Analysis of Evolving Alloy Specifications. ISR Technical Report UCI-ISR-15-1, Institute for Software Research, University of California, Irvine, Sep. 2015.

[T3] Chong Tang, Kevin Sullivan and Hamid Bagheri. Specification-Driven Tradespace Analysis. Technical report CS-2015-1, University of Virginia, Department of Computer Science, Feb. 2015.

[T2] Hamid Bagheri and Kevin Sullivan. Architecturally Correct-by-Construction Synthesis for Contemporary Frameworks and Middleware Platforms. Technical report CS-2010-15, University of Virginia Department of Computer Science, Dec. 2010.

[T1] Hamid Bagheri, Yuanyuan Song and Kevin Sullivan. Architecture as an Independent Variable. Technical report CS-2009-11, University of Virginia, Department of Computer Science, Nov. 2009.

Honors & Awards

2012 Distinguished Paper Award for [C10] (SEKE 2012)

2011 ACM Travel Grant, selected as a finalist at the ACM Graduate Student Research Competition held at ICSE 2011.

2008 Ranked top 3 among software engineering graduate students (Sharif University).

2003 Qualified for International *RoboCup* competition as one of the four best national teams.

Teaching Experience

2013 **Lecturer**, CS 1120: Introduction to Computing: Explorations in Language, Logic, and Machines, University of Virginia. I presented two lectures focused on Coq for this course.

2012 **Lecturer**, CS 1120: Introduction to Computing: Explorations in Language, Logic, and Machines, University of Virginia. I presented two lectures focused on finite state machines for this course.

2010 **Lecturer**, CS 4501: Special Topics in Computer Science, Computational Photography, University of Virginia. I presented four lectures focused on Qt programming for this course.

2007 **Teaching Assistant**, Software Engineering, Sharif University of Technology.

2006 **Teaching Assistant**, Software Engineering, Sharif University of Technology.

2004 **Instructor**, Computer Course, Rouzbeh High School, Tehran, Iran.

Advising Experience

All mentees were supervised during my PhD and postdoctoral studies.

Graduate Nariman Mirzaei, Alireza Sadeghi, Ehsan Kouroshfar, Reyhaneh Jabbarvand Behrouz, Chong Tang and Xi Wang

Undergrad. Cody Blevins and Jeff Kusi

Professional Activity

2001–Present	ACM (Association for Computing Machinery) Student Member.
PC Member	International Conference on Software Engineering and Knowledge Engineering, 2012–2015
Reviewer	IEEE Transactions on Software Engineering IEEE Software International Journal on Software Engineering and Knowledge Engineering International Conference on Fundamental Approaches to Software Engineering (FASE), 2015 The European Conference on Software Architecture (ECSA), 2015 Working IEEE/IFIP Conference on Software Architecture (WICSA), 2014 International Conference on Software Engineering (ICSE), 2010 The 2011 CSI International Symposium on Computer Science and Software Engineering (CSSE), 2011
Student Volunteer	International Conference on Aspect-Oriented Software Development (AOSD 2009).

References

Kevin Sullivan, University of Virginia, sullivan@cs.virginia.edu

Sam Malek, University of California, Irvine, malek@uci.edu

Daniel Jackson, Massachusetts Institute of Technology, dnj@mit.edu

William G. Griswold, University of California, San Diego, wgg@cs.ucsd.edu

Mary Lou Soffa, University of Virginia, soffa@cs.virginia.edu