Jian Xiang

Curriculum Vitae

Research Associate
John A. Paulson School of Engineering and Applied Sciences
Harvard University *jxiang@seas.harvard.edu*
150 Western Avenue, Boston, MA, 02134 *www.jianxiang.info*

Research Interests

The primary goal of my research is to advance the state of art of formal methods for modeling and verifying the correctness and security of computer systems, especially cyber-physical systems, and to develop tools and techniques to help construct systems that are correct and secure. My broad research interests include security, formal verification, cyber-physical system, and programming language.

Education

- **Ph.D., Computer Science**
  University of Virginia, Charlottesville, VA, Dec.2016.
  Dissertation title: *Interpreted Formalism: Towards System Assurance and the Real-World Semantics of Software*
  Advisor: John Knight, Kevin Sullivan
- **M.E., Software Engineering**
  Tsinghua University, Beijing, China, Aug.2008.
  Thesis title: *SREM: A Service Requirements Elicitation Mechanism based on Ontology*
  Advisor: Lin Liu
- **B.S., Electronic Science and Technology**
  Huazhong University of Science and Technology, Wuhan, China, May 2005.

Research Exprience

- **Research Associate**
  Harvard University, Cambridge/Allston, MA — Aug.2020 – Present
- **Postdoctoral Researcher**
  Harvard University, Cambridge, MA — Aug.2017 – Aug.2020
- **Research Specialist**
  University of Virginia, Charlottesville, VA — Sep.2016 – May.2017
- **Research Intern**
  IBM China Research Center, Beijing, China — Jul.2006 – Sep.2006

Publications

Manuscripts Under Review/In Preparation

- *Formal Reasoning of Security for Industrial Robotic Manipulators*. (in preparation)
  J. Xiang, R. Ghosal, S. Ahmed, M. Juliato, V. Lesi, V. J. Reddi and M. R. Sastry.
- *Extending Dynamic Logics with First-Class Relational Reasoning*. (Under Review)
  J. Xiang, N. Fulton, and S. Chong.

Refereed Conference Paper

- *Quantitative Robustness Analysis of Sensor Attacks on Cyber-Physical Systems*. (to appear)
  ACM International Conference on Hybrid Systems: Computation and Control (HSCC), May 2023
  S. Chong*, R. Lanotte*, Massimo Merro*, S. Tini*, and **J. Xiang*** (all authors contributed equally)
- *Relational Analysis of Sensor Attacks on Cyber-Physical Systems*.
  IEEE Computer Security Foundations Symposium (CSF), June 2021.
  J. Xiang, N. Fulton, and S. Chong.
- *Co-Inflow: Coarse-grained Information Flow Control for Java-like Languages*.
  IEEE Symposium on Security and Privacy (S&P), May 2021.
  J. Xiang and S. Chong.
- *Is My Software Consistent with the Real World?*.
  International Symposium on High Assurance Systems Engineering (HASE), Jan. 2017.
  J. Xiang, J. Knight, and K. Sullivan.
- *Synthesis of Logic Interpretation*.
  International Symposium on High Assurance Systems Engineering (HASE), Jan. 2016.
  J. Xiang, J. Knight, and K. Sullivan.
- *Real-World Types and Their Application*.
  International Conference on Computer Safety, Reliability and Security (SAFECOMP), Sep. 2015.
  J. Xiang, J. Knight, and K. Sullivan.
- *SREM: A Service Requirements Elicitation Mechanism based on Ontology*.
  IEEE International Computer Software and Applications Conference (COMPSAC). Jul. 2007
  J. Xiang, L. Liu, W. Qiao.

Book Chapter

- *A Rigorous Definition of Cyber-Physical Systems*.
  Trustworthy Cyber-Physical Systems. CRC Press, 2016.
  J. Knight, **J. Xiang**, and K. Sullivan.

Workshop Paper

- *A Safety Condition Monitoring System*.
  International Workshop on Assurance Cases for Software-intensive Systems, Sep. 2015.
  J. Knight, J. Rowanhill and **J. Xiang**.

PhD Thesis

- *Interpreted Formalism: Towards System Assurance and the Real-World Semantics of Software*

Teaching Experience

- Teaching Assistant for *Advanced Software Development* — Fall 2014, Spring 2014
  Office hours, grading, lab lectures
- Teaching Assistant for *Discrete Mathematics* — Fall 2013
  Office hours, grading, lab lectures
- Teaching Assistant for *Requirements Engineering* — Fall 2007
  Office hours, grading, lab lectures

Professional Activity

- *Program Committee*: Workshop on Programming Languages and Analysis for Security (PLAS 2021)
- *Journal Reviewer*: ACM Transactions on Programming Languages and Systems (TOPLAS 2022)

Invited Talk

- *Co-Inflow: Coarse-grained Information Flow Control for Java-like Languages*
  Amazon AWS Privacy Engineering Seminar
- *Co-Inflow: Coarse-grained Information Flow Control for Java-like Languages*
  NIO.io Security Seminar

References

- **Prof. Stephen Chong**
  Department of Computer Science
  Harvard University
  Science and Engineering Complex, 4.414
  Allston, MA 02134
  Email: chong@seas.harvard.edu
  Phone: +1 (617) 496-6382
- **Prof. Vijay Janapa Reddi**
  School of Engineering and Applied Sciences
  Harvard University
  Science and Engineering Complex, 5.305
  Allston, MA 02134
  Email: vj@eecs.harvard.edu
  Phone: +1 (408) 390-2790
- **Prof. Massimo Merro**
  Department of Computer Science
  University of Verona
  Ca' Vignal 2, Floor 1, Room 57
  Strada Le Grazie 15 - 37134 Verona, Italy
  Email: massimo.merro@univr.it
  Phone: +39 (045) 802-7992
- **Prof. Kevin Sullivan**
  Department of Computer Science
  University of Virginia
  Rice Hall 508
  Charlottesville, VA 22904
  Email: sullivan@virginia.edu
  Phone: +1 (434) 982-2206