Daejun Park

Department of Computer Science, University of Illinois at Urbana-Champaign
2107 Thomas M. Siebel Center for Computer Science
201 North Goodwin Avenue, Urbana, IL 61801-2302
Email : dpark69@illinois.edu Phone : (217) 419-1999

Research Interests

- Formal verification of real-world safety-critical systems, from compilers to smart contracts to cryptographic primitives.

Education

Ph.D., Computer Science, University of Illinois at Urbana-Champaign 2013 – 2018
M.S., Computer Science and Engineering, Seoul National University, Korea 2006 – 2008
B.S., Computer Science and Engineering, Seoul National University, Korea 2001 – 2006

Publications

[1] **Cross-Language Program Equivalence with Application to LLVM**.
Theodoros Kasampalis, *Daejun Park*, Vikram S. Adve, and Grigore Rosu. *Manuscript*, 2018.

[2] **Verifiable Computing for Approximate Computation**.
Shuo Chen, Jung Hee Cheon, Dongwoo Kim, and *Daejun Park*. *Manuscript*, 2018.

[3] **A Complete Formal Semantics of x86-64 User-Level Instruction Set Architecture**.
Sandeep Dasgupta, *Daejun Park*, Theodoros Kasampalis, Vikram S. Adve, and Grigore Rosu. *Proceedings of the 40th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'19)*, 2019.

[4] **Logistic Regression on Homomorphic Encrypted Data at Scale**.
Kyoohyung Han, Seungwan Hong, Jung Hee Cheon, and *Daejun Park*. *Proceedings of the Thirty-First AAAI Conference on Innovative Applications of Artificial Intelligence (IAAI'19)*, 2019.

[5] **A Formal Verification Tool for Ethereum VM Bytecode**.
Daejun Park, Yi Zhang, Manasvi Saxena, Philip Daian, and Grigore Rosu. *Proceedings of the 2018 26th ACM SIGSOFT International Symposium on Foundations of Software Engineering (FSE'18)*, 2018.

[6] **KEVM: A Complete Formal Semantics of the Ethereum Virtual Machine**.
Everett Hildenbrandt, Manasvi Saxena, Nishant Rodrigues, Xiaoran Zhu, Philip Daian, Dwight Guth, *Daejun Park*, Yi Zhang, Brandon Moore and Grigore Rosu. *Proceedings of the 2018 IEEE Computer Security Foundations Symposium (CSF'18)*, 2018.

[7] **Invariant Synthesis for Incomplete Verification Engines**.
Daniel Neider, P. Madhusudan, Pranav Garg, Shambwaditya Saha, and *Daejun Park*. *Proceedings of the 24th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'18)*, 2018.

[8] **Semantics-Based Program Verifiers for All Languages**.
Andrei Stefanescu, *Daejun Park*, Shijiao Yuwen, Yilong Li, and Grigore Rosu. *Proceedings of the 2016 ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA'16)*, 2016. **Distinguished Paper Award**

[9] **KJS: A Complete Formal Semantics of JavaScript**.
Daejun Park, Andrei Stefanescu, and Grigore Rosu. *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'15)*, 2015.

[10] **Global Sparse Analysis Framework**.
Hakjoo Oh, Kihong Heo, Wonchan Lee, Woosuk Lee, *Daejun Park*, Jeehoon Kang, and Kwangkeun Yi. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, Vol.36, No.3, Sep 2014.

Work Experience

Research Scientist, Runtime Verification, Inc., IL 2018 – Present

- *Formally verifying* high-profile, security-critical Ethereum smart contracts.

Research Intern, Microsoft Research, WA Summer 2017

- Designed a novel *verifiable computing* technique for secure deep neural network training.

Founding Member & Technical Lead, Sparrow, Korea 2008 – 2012

- Designed and implemented *a static program analysis tool* detecting memory safety errors and security vulnerabilities in embedded-system software.

Honors & Awards

Distinguished Paper Award at OOPSLA'16	2016
Korean Government Scholarship	2013–2015
Honors Scholarship, Seoul National University	2003–2004
Bronze Medal in National Mathematics Competition	2000

References

Grigore Rosu
Professor
Department of Computer Science
University of Illinois at Urbana-Champaign
Email: grosu@illinois.edu

Kwangkeun Yi
Professor
School of Computer Science and Engineering
Seoul National University
Email: kwang@ropas.snu.ac.kr