Woosuk Lee

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Education

Computer Science and Engineering, Seoul National University   Mar 2009 – Feb 2016
Doctor of Philosophy in Computer Science and Engineering
Thesis: Improving the Usability of Static Analyzers [4]
Advisor: Prof. Kwangkeun Yi

Computer Science and Engineering, Seoul National University   Mar 2005 – Feb 2009
Bachelor of Science in Computer Science

Research Interests

My research interest spans all aspects of programming systems with the goal of improving software quality and programmer productivity. In particular,

- Sound, Scalable, & User-friendly Static Analysis [4, 2, 8, 9, 7, 10, 12, 11]

- Scalable Automated Program Generation [1, 13, 6, 3, 5]

Experience

Hanyang University   Sep 2018 –   present
Assistant Professor

University of Pennsylvania   Jan 2017 – Aug 2018
Post-doctoral Researcher
Advisor: Prof. Mayur Naik

Georgia Institute of Technology   Mar 2016 – Jan 2017
Post-doctoral Researcher
Advisor: Prof. Mayur Naik

University of California, Berkeley   Jul 2012 – Nov 2012
Visiting Student
Advisor: Prof. Dawn Song

Fasoo.com   Jul 2010 – Aug 2010
Intern

Advisor: Dr. Kyujin Cho

Publications

Author names annotated * indicate co-first authorship for papers where multiple authors made equally significant contributions.

[1] Kihong* Heo, Woosuk* Lee, Pardis Pashakhanloo, and Mayur Naik. Effective program debloating via reinforcement learning. In *Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security*, CCS '18, pages 380–394, New York, NY, USA, 2018. ACM.

[2] Sulekha Kulkarni, Richard Zhang, Ximing Si, Kihong Heo, Woosuk Lee, and Mayur Naik. Beyond deductive methods in program analysis. 2018.

[3] DongKwon Lee, Woosuk Lee, Hakjoo Oh, and Kwangkeun Yi. Optimizing homomorphic evaluation circuits by program synthesis and term rewriting. In *Proceedings of the 41st ACM SIGPLAN Conference on Programming Language Design and Implementation*, PLDI 2020, page 503–518, New York, NY, USA, 2020. Association for Computing Machinery.

[4] Woosuk Lee. Improving the usability of static analyzers, 2016.

[5] Woosuk Lee. Combining the top-down propagation and bottom-up enumeration for inductive program synthesis. In *Proceedings of the 48th ACM SIGPLAN Symposium on Principles of Programming Languages*, POPL '21, New York, NY, USA, 2021. ACM.

[6] Woosuk Lee, Kihong Heo, Rajeev Alur, and Mayur Naik. Accelerating search-based program synthesis using learned probabilistic models. In *Proceedings of the 39th ACM SIGPLAN Conference on Programming Language Design and Implementation*, PLDI 2018, pages 436–449, New York, NY, USA, 2018. ACM.

[7] Woosuk Lee, Hyunsook Hong, Kwangkeun Yi, and Jung Hee Cheon. Static analysis with set-closure in secrecy. In Sandrine Blazy and Thomas Jensen, editors, *22nd International Static Analysis Symposium*, pages 18–35, Berlin, Heidelberg, 2015. Springer Berlin Heidelberg.

[8] Woosuk Lee, Wonchan Lee, Dongok Kang, Kihong Heo, Hakjoo Oh, and Kwangkeun Yi. Sound non-statistical clustering of static analysis alarms. *ACM Trans. Program. Lang. Syst.*, 39(4):16:1–16:35, August 2017.

[9] Woosuk Lee, Wonchan Lee, and Kwangkeun Yi. Sound non-statistical clustering of static analysis alarms. In Viktor Kuncak and Andrey Rybalchenko, editors, *Verification, Model Checking, and Abstract Interpretation*, pages 299–314, Berlin, Heidelberg, 2012. Springer Berlin Heidelberg.

[10] Woosuk Lee, Hakjoo Oh, and Kwangkeun Yi. A progress bar for static analyzers. In Markus Müller-Olm and Helmut Seidl, editors, *21st International Static Analysis Symposium*, pages 184–200, Cham, 2014. Springer International Publishing.

[11] Hakjoo Oh, Kihong Heo, Wonchan Lee, Woosuk Lee, Daejun Park, Jeehoon Kang, and Kwangkeun Yi. Global sparse analysis framework. *ACM Trans. Program. Lang. Syst.*, 36(3):8:1–8:44, September 2014.

[12] Hakjoo Oh, Kihong Heo, Wonchan Lee, Woosuk Lee, and Kwangkeun Yi. Design and implementation of sparse global analyses for c-like languages. In *Proceedings of the 33rd ACM SIGPLAN Conference on Programming Language Design and Implementation*, PLDI '12, pages 229–238, New York, NY, USA, 2012. ACM.

[13] Xujie* Si, Woosuk* Lee, Richard Zhang, Aws Albarghouthi, Paraschos Koutris, and Mayur Naik. Syntax-guided synthesis of datalog programs. In *Proceedings of the 2018 26th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering*, ESEC/FSE 2018, pages 515–527, New York, NY, USA, 2018. ACM.

Software

I have contributed as a main developer to the following open-source software:

- Sparrow: a static analyzer for C program
  http://www.github.com/ropas/sparrow

- Euphony: a probabilistic model-guided program synthesizer
  https://github.com/wslee/euphony

- Chisel: A System for Debloating C/C++ Programs
  https://chisel.cis.upenn.edu

Patents

- Copyright information inserting system and method (Registration No. (date): 1010971040000 (12/15/2011))

- Electronic apparatus for determining whether program comprises malicious code and method for controlloing thereof (Application No. (date): 10-2015-0055481 (04/20/2015))

Academic Activities

Program Committee (PC) members

- ESOP 2020: European Symposium on Programming

- PLDI 2019: 40th ACM SIGPLAN Conference on Programming Language Design and Implementation

- ICSE 2020 (Software Engineering in Practice track): 42nd International Conference on Software Engineering

- TAPAS 2020: 11th Workshop on Tools for Automatic Program Analysis

Reveiwer

- ‣ IEEE Transactions on Software Engineering
- ‣ ACM Transactions on Programming Languages and Systems

References

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