SEONGMIN LEE

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Education

Korea Advanced Institue of Science and Technology   Republic of Korea

Doctor of Philosophy, School of Computing   Sep. 2016 – Present
   Advisor: Shin Yoo
   GPA - 4.02/4.3

Bachelor of Science, School of Computing   Feb. 2012 – Aug. 2016
Bachelor of Science, Department of Mathematical Sciences
   GPA - 3.48/4.3

Research Experience

Computational Intelligence for Software Engineering Laboratory (COINSE), KAIST   Sep. 2016 – Present
Ph.D. Student   *Daejeon, Republic of Korea*
   - Researched approximating the degree of dependence between program element using causal inference – CPDA
   - Researched applying statistical models on the observation data to approximate the program dependence – MOAD
   - Researched inferencing the type information in the binary executables using RNN with National Security Research Institute
   - Researched classifying the false positive alarms from static checker in continuous integration pipeline using CNN with Samsung Research
   - Researched program dependence approximation using the lexical model on the source code – MOBS

Computational Intelligence for Software Engineering Laboratory (COINSE), KAIST   Mar. 2016 – Aug. 2016
Undergraduate Research Intern   *Daejeon, Republic of Korea*
   - Researched on the amortised deep parameter optimisation of GPGPU work group size for OpenCV.
   - Accelerated the scalablility of Observation based slicing (ORBS) by applying a code distance metric during the slicing.

Programming Language Research Group (PLRG) Lab, KAIST   Jul. 2015 – Feb. 2016
Undergraduate Research Intern   *Daejeon, Republic of Korea*
   - Developed a source code translator from C# to C++ with F#.
   - Developed a frontend of Scalable Analysis Framework for ECMAScript (SAFE), a Javascript static analysis tool.

Publications

Peer-Reviewed Journal Articles

   - Seongmin Lee, David Binkley, Robert Feldt, Nicolas Gold, and Shin Yoo. Observation-based approximate dependency modeling and its use for program slicing. *Journal of Systems and Software*, page 110988, 2021

   - Seongmin Lee, David Binkley, Nicolas Gold, Syed Islam, Jens Krinke, and Shin Yoo. Evaluating lexical approximation of program dependence. *Journal of Systems and Software*, 160:110459, 2020

Peer-Reviewed Conference and Workshop Papers

   - Saeyoon Oh, Seongmin Lee, and Shin Yoo. Effectively sampling higher order mutants using causal effect effectively sampling higher order mutants using causal effect. In *The 16th International Workshop on Mutation Analysis*, 2021

   - Seongmin Lee. Scalable and approximate program dependence analysis. In *Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Companion Proceedings*, ICSE '20, pages 162–165, New York, NY, USA, 2020. Association for Computing Machinery

   - S. Lee, S. Hong, J. Yi, T. Kim, C. Kim, and S. Yoo. Classifying false positive static checker alarms in continuous integration using convolutional neural networks. In *2019 12th IEEE Conference on Software Testing, Validation and Verification (ICST)*, pages 391–401, 2019

- S. Lee, D. Binkley, R. Feldt, N. Gold, and S. Yoo. Moad: Modeling observation-based approximate dependency. In *2019 19th International Working Conference on Source Code Analysis and Manipulation (SCAM)*, pages 12–22, 2019

- Seongmin Lee and Shin Yoo. Hyperheuristic observation based slicing of guava. In Tim Menzies and Justyna Petke, editors, *Search Based Software Engineering*, pages 175–180, Cham, 2017. Springer International Publishing

- Gabin An, Jinhan Kim, Seongmin Lee, and Shin Yoo. PyGGI: Python General framework for Genetic Improvement. In *Proceedings of Korea Software Congress*, KSC 2017, December 2017

- Jeongju Sohn, Seongmin Lee, and Shin Yoo. *Amortised Deep Parameter Optimisation of GPGPU Work Group Size for OpenCV*, pages 211–217. Springer International Publishing, Cham, 2016

Posters & Technical Reports
- Seongmin Lee, Dave Binkley, Robert Feldt, Nicolas Gold, and Shin Yoo. Causal program dependence analysis and causal fault localization. Technical Report CS-TR-2021-423, Korea Advanced Institute of Science and Technology, 291 Daehak-ro, Yuseong-gu, Daejeon, Korea 34141, January 2021

- Seongmin Lee, David Binkley, Nicolas Gold, Syed Islam, Jens Krinke, and Shin Yoo. Mobs: Multi-operator observation-based slicing using lexical approximation of program dependence. In *Proceedings of the 40th International Conference on Software Engineering: Companion Proceeedings*, ICSE '18, pages 302–303, New York, NY, USA, 2018. Association for Computing Machinery

- Seongmin Lee and Shin Yoo. Using source code lexical similarity to improve efficiency of Observation Based Slicing. Technical Report CS-TR-2017-412, School of Computing, KAIST, May 2017

Software Engineering Notes
- William B. Langdon, Westley Weimer, Justyna Petke, Erik Fredericks, Seongmin Lee, Emily Winter, Michail Basios, Myra B. Cohen, Aymeric Blot, Markus Wagner, Bobby R. Bruce, Shin Yoo, Simos Gerasimou, Oliver Krauss, Yu Huang, and Michael Gerten. Genetic improvement @ icse 2020. *SIGSOFT Softw. Eng. Notes*, 45(4):24–30, October 2020

Academic Services

- Reviewer: JSS 2020, JSS 2021

- Program committee: ICSME 2021 (Artifact Evaluation Track)

Awards and honors

- **2021 Naver Ph.D. Fellowship Award**: Awarded by NAVER Corp. to Ph.D. candidates who have published an outstanding research paper or have excellent publication performance.

- Government-sponsored Scholarship, Ministry of Science and ICT of Korea, 2016 - Present

- Government-sponsored Scholarship, Ministry of Science and ICT of Korea, 2012 - 2016

Invited Talks

- *Observation-based approximate dependency modeling and its use for program slicing*
  Korea Conference on Software Engineering, 2022

- *MOBS: Multi-Operator Observation-Based Slicing using Lexical Approximation of Program Dependence*
  59th CREST Open Workshop - Multi-language Software Analysis, 2018

Teaching Experience

- Teaching Assistant, Automated Software Testing (CS453), School of Computing, KAIST, Spring 2019

- Teaching Assistant, Artificial Intelligence Based Software Engineering (CS454), School of Computing, KAIST, Fall 2018

- Teaching Assistant, Introduction to Logic for Computer Science (CS402), School of Computing, KAIST, Spring 2018

- Teaching Assistant, Artificial Intelligence Based Software Engineering (CS454), School of Computing, KAIST, Fall 2017

- Teaching Assistant, Introduction to Logic for Computer Science (CS402), School of Computing, KAIST, Spring 2017

- Teaching Assistant, Special Topics in Computer Science ⟨Search Based Software Engineering⟩ (CS492), School of Computing, KAIST, Fall 2016