Curriculum Vitæ

Jinhan Kim

Università della Svizzera italiana (USI)
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Date of birth: January 3 1994
Nationality: Republic of Korea

Current Position

Postdoctoral Researcher, Software Institute, Università della Svizzera italiana (USI)

Education

Ph.D. in Computer Science, KAIST, South Korea (March 2017 - February 2023)
Integrated Master and Ph.D. program
Advisor: Dr. Shin Yoo
Committee: Dr. Annibale Panichella, Dr. Moonzoo Kim, Prof. Robert Feldt, Prof. Doo-Hwan Bae
Thesis: Exploiting Mutant's Relationship with Code, Faults, and Patches for Higher Efficacy of Mutation Analysis

B.S. in Computer Science, KAIST, South Korea (March 2012 - February 2017)

Employment and Experience

Postdoctoral Researcher, USI, Switzerland (1st September 2023 - Present)
Advisor: Prof. Paolo Tonella
I am working as a postdoctoral researcher at USI with Prof. Paolo Tonella.

Postdoctoral Researcher, KAIST, South Korea (1st March 2023 - 31st August 2023)
Advisor: Dr. Shin Yoo
I worked as a postdoctoral researcher at COINSE lab led by Dr. Shin Yoo.

Visiting Ph.D. Student, USI, Switzerland (3rd August 2022 - 23rd September 2022)
Advisor: Prof. Paolo Tonella
Funding: Young Researchers' Exchange Prorgramme between South Korea and Switzerland 2022
I visited TAU research group at Università della Svizzera italiana (USI) and conducted research on mutation-based deep learning system testing and an empirical study on deep learning program repair.

Frontend Engineer at Tanker Fund Corp., South Korea (April 2016 - February 2019)
I developed an asset management service named Tanker on which users can trade and invest in a variety of financial products online.

Frontend Engineer at Elice Corp., South Korea (September 2015 - June 2016)
I developed an online platform for learning programming and software development called Elice.

Research Intern at Users & Information Lab, KAIST (September 2015 - December 2015)
Advisor: Prof. Alice Oh
I designed a new social back-channel application named EliceQ and deployed in a university classroom where students can ask questions anonymously at any time.

Research Intern at NC Lab, KAIST (March 2015 - August 2015)
Advisor: Prof. Junehwa Song
I researched on a relational norm intervention for behaviour change, mainly developed an application named BeUpright that enabled a two-week human study.

Research Interests

Software engineering, software testing, mutation testing, deep learning system testing, human-computer interaction.

Publications

Journal Articles

[3] **Jinhan Kim**, Gabin An, Robert Feldt, and Shin Yoo. "Learning Test-Mutant Relationship for Accurate Fault Localisation". In: *Elsevier Information and Software Technology*. IST (2023).

[2] **Jinhan Kim**, Robert Feldt, and Shin Yoo. "Evaluating Surprise Adequacy for Deep Learning System Testing". In: *ACM Transactions on Software Engineering and Methodology*. TOSEM (2023).

[1] **Jinhan Kim**, Juyoung Jeon, Shin Hong, and Shin Yoo. "Predictive Mutation Analysis via Natural Language Channel in Source Code". In: *ACM Transactions on Software Engineering and Methodology*. TOSEM (2022).

Conferences & Workshops (Full Papers)

[10] **Jinhan Kim**, Jongchan Park, and Shin Yoo. "The Inversive Relationship Between Bugs and Patches: An Empirical Study". In: *Proceedings of the 18th International Workshop on Mutation Analysis*. Mutation 2023. 2023.

[9] **Jinhan Kim**, Nargiz Humbatova, Gunel Jahangirova, Paolo Tonella, and Shin Yoo. "Repairing DNN Architecture: Are We There Yet?" In: *Proceedings of the 16th IEEE International Conference on Software Testing, Verification and Validation*. ICST 2023. 2023.

[8] Juyeon Yoon, Seungjoon Chung, Kihyuck Shin, **Jinhan Kim**, Shin Hong, and Shin Yoo. "Repairing Fragile GUI Test Cases Using Word and Layout Embedding". In: *Proceedings of the 15th IEEE International Conference on Software Testing, Verification and Validation*. ICST 2022 Industry Track. 2022.

[7] **Jinhan Kim**, Gabin An, Robert Feldt, and Shin Yoo. "Ahead of Time Mutation Based Fault Localisation Using Statistical Inference". In: *Proceedings of the 32nd International Symposium on Software Reliability Engineering*. ISSRE 2021. 2021.

[6] **Jinhan Kim**, Jeongil Ju, Robert Feldt, and Shin Yoo. "Reducing DNN Labelling Cost Using Surprise Adequacy: An Industrial Case Study for Autonomous Driving". In: *Proceedings of ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*. ESEC/FSE 2020 Industry Track. 2020.

[5] **Jinhan Kim**, Robert Feldt, and Shin Yoo. "Guiding Deep Learning System Testing Using Surprise Adequacy". In: *Proceedings of the 41th International Conference on Software Engineering*. ICSE 2019. IEEE Press, 2019, pp. 1039–1049.

[4] **Jinhan Kim**, Michael G. Epitropakis, and Shin Yoo. "Learning Without Peeking: Secure Multi-Party Computation Genetic Programming". In: *Proceedings of the 10th International Symposium on Search Based Software Engineering*. SSBSE 2018. 2018, pp. 246–261.

[3] Jungkook Park, Yeong Hoon Park, **Jinhan Kim**, Jeongmin Cha, Suin Kim, and Alice Oh. "Elicast: Embedding Interactive Exercises in Instructional Programming Screencasts". In: *Proceedings of the Fifth Annual ACM Conference on Learning at Scale*. L@S 2018. 2018, pp. 1–10.

[2] Gabin An, **Jinhan Kim**, and Shin Yoo. "Comparing Line and AST Granularity Level for Program Repair Using PyGGI". In: *Proceedings of the 4th Genetic Improvement Workshop*. Genetic Improvement 2018. 2018.

[1] Jaemyung Shin, Bumsoo Kang, Taiwoo Park, Jina Huh, **Jinhan Kim**, and Junehwa Song. "BeUpright: Posture Correction Using Relational Norm Intervention". In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI 2016. 2016, pp. 6040–6052.

Short, Poster, Demo, Domestic Papers

[3] Gabin An, **Jinhan Kim**, Seongmin Lee, and Shin Yoo. "PyGGI: Python General framework for Genetic Improvement". In: *Proceedings of Korea Software Congress*. KCSE 2017. 2017.

[2] **Jinhan Kim**, Junhwi Kim, and Shin Yoo. "GPGPGPU: Evaluation of Parallelisation of Genetic Programming Using GPGPU". In: *Proceedings of the 9th International Symposium on Search Based Software Engineering*. SSBSE 2017 Short Papers Track. 2017, pp. 137–142.

[1] Jaemyung Shin, Bumsoo Kang, **Jinhan Kim**, Jina Huh, Junehwa Song, and Taiwoo Park. "Demo: Posture Correction Using Smartphone-Based Relational Intervention Model". In: *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems*. SenSys 2015. Seoul, South Korea, 2015, pp. 495–496.

Awards and Honors

- Best Paper Award (2023), 18th International Workshop on Mutation Analysis.
- CoE Ph.D. Dissertation Award (2023): It is awarded to Ph.D. students of the College of Engineering in KAIST who have demonstrated exceptional research capabilities and made notable achievements during their doctoral studies.
- NAVER Ph.D. Fellowship Award (2020): A scholarship awarded to students in School of Computing at KAIST who have demonstrated outstanding research achievements.

Invited Talks

- KCSE 2023 (Korea Conference on Software Engineering 2023), Pyeongchang, South Korea
  Invited paper presentation
  Title: Predictive Mutation Analysis via Natural Language Channel in Source Code
- KCSE 2022 (Korea Conference on Software Engineering 2022), Pyeongchang, South Korea
  Invited paper presentation
  Title: Ahead of Time Mutation Based Fault Localisation using Statistical Inference
- KSC 2019 (Korea Software Congress 2019), Pyeongchang, South Korea
  Invited paper presentation
  Title: Guiding Deep Learning System Testing Using Surprise Adequacy

Patents

- Method for Evaluating Test Fitness of Input Data for Neural Network and Apparatus Thereof, Korea Patent, No. 1020190104591. Published: August 09, 2021.

Academic Services

Program Committee

- Year 2024: ICSE 2024 Demonstrations Track
- Year 2023: Mutation 2023, ASE 2023 NIER Track, ICSME 2023 Artifact Evaluation Track and ROSE Festival
- Year 2022: Mutation 2022, ICST 2022 Poster Track, ICSME 2022 Registered Reports Track, ICSME 2022 Artifact Evaluation Track and ROSE Festival
- Year 2021: Mutation 2021, ICSME 2021 Artifact Evaluation Track
- Year 2020: Mutation 2020

Reviewer

- Year 2023: TSE, TOSEM, EMSE, JSEP
- Year 2022: TOSEM, JSEP
- Year 2021: TOSEM, STVR
- Year 2020: IST, JSS

Teaching

Teaching Assistant

- CS101 Introduction to Programming (Fall 2016, Spring 2020, Fall 2020, Spring 2021)
- CS453 Automated Software Testing (Spring 2018, Spring 2019)
- CS454 AI Based Software Engineering (Fall 2021)
- CS489 Computer Ethics and Social Issues (Fall 2019)