KANG HONG JIN

Ph.D Candidate
School of Computing and Information Systems
Singapore Management University

hjkang.2018@phdcs.smu.edu.sg
https://kanghj.github.io

RESEARCH INTERESTS

My research interests are in Software Engineering, with a focus on Software Testing and Machine Learning for Software Engineering. In my PhD, my work focused on bugs and vulnerabilities related to APIs and third-party code, e.g., libraries.

EDUCATION

Ph.D
Jan 2019 – Jan 2023 (expected)
School of Computing and Information Systems
Singapore Management University

BACHELOR OF COMPUTING
2012 – 2016
School of Computing
National University of Singapore
First Class Honours/Highest Distinction

PEER-REVIEWED CONFERENCE/JOURNAL PUBLICATIONS

Compressing Pre-trained Models of Code into 3 MB
Jieke Shi, Zhou Yang, Bowen Xu, **Hong Jin Kang,** David Lo
IEEE/ACM International Conference on Automated Software Engineering 2022 (ASE 2022)

AutoPruner: Tranformer-based Call Graph Pruning
Le-Cong Thanh, **Hong Jin Kang,** Truong Giang Nguyen, Stefanus Agus Haryono, David Lo, Xuan-Bach D. Le, Huynh Quyet Thang.
ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering 2022 (ESEC/FSE 2022)

Detecting False Alarms from Automatic Static Analysis Tools: How Far are We?
Hong Jin Kang, Khai Loong Aw, and David Lo.
IEEE/ACM International Conference on Software Engineering 2022 (ICSE 2022)
(**Nominated** for a **Distinguished Paper Award**)

Test Mimicry to Assess the Exploitability of Library Vulnerabilities.
Hong Jin Kang, Truong Giang Nguyen, Bach Le, Corina Pasareanu, and David Lo.
ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2022).

HERMES: Using Commit-Issue Linking to Detect Vulnerability-Fixing Commits
Truong Giang Nguyen, **Hong Jin Kang,** David Lo, Sharma Abhishek, Santosa Andrew, Sharma Asankhaya, and Ming Yi Ang.
IEEE International Conference on Software Analysis, Evolution and Reengineering 2022 (SANER 2022)

Active Learning of Discriminative Subgraph Patterns for API Misuse Detection
Hong Jin Kang, David Lo.
IEEE Transactions on Software Engineering (TSE)

Adversarial Specification Mining
Hong Jin Kang, David Lo.
ACM Transactions on Software Engineering and Methodology (TOSEM)

IoTBox: Sandbox Mining to Prevent Interaction Threats in IoT Systems
Hong Jin Kang, David Lo, Sheng Qin Sim
IEEE International Conference on Software Testing, Verification and Validation 2021 (ICST 2021)

AndroEvolve: Automated Android API Update with Data Flow Analysis and Variable Denormalization
Stefanus A Haryono, Ferdian Thung, David Lo, Lingxiao Jiang, Julia Lawall, **Hong Jin Kang,** Lucas Serrano, Gilles Muller
Empirical Software Engineering (EMSE)

BiasFinder: Metamorphic test generation to uncover bias for sentiment analysis systems.
Muhammad Hilmi Asyrofi, Zhou Yang, Imam Nur Bani Yusuf, **Hong Jin Kang**, Ferdian Thung, and David Lo
IEEE Transactions on Software Engineering (TSE)

CC2Vec: Distributed representations of code changes,
Thong Hoang, **Hong Jin Kang**, Julia Lawall, David Lo.
ACM/IEEE International Conference on Software Engineering 2020 (ICSE 2020)

Towards Generating Transformation Rules without Examples for Android API Replacement
Ferdian Thung, **Hong Jin Kang**, Lingxiao Jiang, David Lo.
IEEE International Conference on Software Maintenance and Evolution 2019 (ICSME 2019)

Assessing the Generalizability of code2vec Token Embeddings
Hong Jin Kang, Tegawende F Bissyandé., David Lo.
ACM/IEEE International Conference on Automated Software Engineering 2019 (ASE 2019)

Semantic Patches for Java Program Transformation
Hong Jin Kang, Ferdian Thung, Julia Lawall, Gilles Muller, Lingxiao Jiang, David Lo.
European Conference on Object-Oriented Programming 2019 (ECOOP 2019)

SHORT PAPERS

AndroEvolve: Automated Update for Android Deprecated-API Usages
by Stefanus Agus Haryono, Ferdian Thung, David Lo, Lingxiao Jiang, Julia Lawall, **Hong Jin Kang,** Lucas Serrano, Gilles Muller
ACM/IEEE International Conference on Software Engineering 2021 (ICSE 2021) – Demonstrations

BugsInPy: a database of existing bugs in Python programs to enable controlled testing and debugging studies
Ratnadira Widyasari, Sheng Qin Sim, Camellia Lok, Haodi Qi, Jack Phan, Qijin Tay, Constance Tan, Fiona Wee, Jodie Ethelda Tan, Yuheng Yieh, Brian Goh, Ferdian Thung, **Hong Jin Kang**, Thong Hoang, David Li, Eng Lieh Ouh
ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020) Tool Demo

Automatic Android Deprecated-API Usage Update by Learning from Single Updated Example
Stefanus Agus Haryono, Ferdian Thung, **Hong Jin Kang**, Lucas Serrano, Gilles Muller, Julia Lawall, David Lo, Lingxiao Jiang.
International Conference on Program Comprehension 2020 - Early Research Achievements. 2020 (ICPC ERA 2020)

A Comparison of Word Embeddings for English and Cross-Lingual Chinese Word Sense Disambiguation
Hong Jin Kang, Tao Chen, Muthu Kumar Chandrasekaran, Min-Yen Kan.
The COLING Workshop on Natural Language Processing Techniques for Educational Applications Workshop (NLP-TEA-3 2016)

SERVICE

JOURNAL REVIEWER: EMSE, TOSEM, IST
SUB-REVIEWER: ICSME 2020, APSEC 2020, ASE 2021, ICST 2022, ICSE 2022
PROGRAM COMMITTEE: SANER ERA 2023

MENTORED STUDENTS

I had the privilege of working with other students/junior researchers, including

- Aw Khai Loong — undergraduate student
- Sim Sheng Qin — undergraduate student
- Jonathan Ooi — masters student
- Le Cong Thanh — research engineer, starting a PhD in Jan 2023
- Truong Giang Nyugen — research engineer
- Stefanus Agus Haryono — research engineer

AWARDS

2022 SMU Dean's List
2020, 2021, 2022 SMU's Presidential Doctoral Fellowship

WORKING EXPERIENCE

AUG 2018 – DEC 2018
RESEARCH ENGINEER, SMU

- Developed Coccinelle4J, a port of Coccinelle for the Java programming language. Coccinelle is a widely adopted program matching and transformation tool for C systems software, including the Linux kernel. Over 6000 commits have been in the Linux kernel with the help of Coccinelle in the past 10 years. We apply Coccinelle4J to the automatic migration of deprecated Android API usages.

2018
BACKEND ENGINEER, GRAB

- Worked with cutting-edge tools and managed cloud-based infrastructure.
- Owned a microservice on the critical path of all bookings. Improved testing to identify single points of failure, improving the resilience of the service to ensure uptime and SLAs are met.

2016 –2018
SOFTWARE ENGINEER, WORKS APPLICATIONS CO. LTD

- Worked on enterprise-grade HR Enterprise Resource Management software.
- Helped in mentoring junior engineers.
- Full-stack development from the back-end using Spring, management of Cassandra, Elasticsearch, to implementing a new user experience on the front-end with modern frameworks.

AUG 2015 – MAY 2016
STUDENT SOFTWARE ENGINEER, TEAMMATES @ NUS

- Involved in both planning and development of the project. Planned and managed weekly releases.
- Part of the team that introduced static analysis tools and CI to the project.

MAY 2014 – AUG 2014
INTERN, TEAMIE

- Developed several new features, including a feature that summarizes users' activity logs to identify highlights of their history on the platform.