Lingjun Liu

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About me

I am an associate research engineer at SureSoft Technologies Inc. in Seongnam, South Korea. I did my master at Korea Advanced Institute of Science and Technology (KAIST), where I was advised by Prof. Doo-Hwan Bae. I have research experiences in testing and reliability analysis of complex systems, such as nuclear safety software, air traffic control systems, and platooning vehicles. My research interests are automated testing and fault diagnosis for safety-critical systems and cyber-physical systems.

Education

2019 – 2021 **M.S. at KAIST**, School of Computing, South Korea
- Advisor: Prof. Doo-Hwan Bae

2018 – 2019 **Exchange student at KAIST**, School of Computing, South Korea

2014 – 2019 **B.S. at National Tsing Hua University**, Computer Science, Taiwan

Work Experience

2022 - now **Associate Research Engineer**, SureSoft Technologies Inc.
- Developing coding guideline checkers and web services for static analysis tool

2021 - 2022 **Full-time Researcher**, KAIST
- Advisor: Prof. Eunkyoung Jee
- Developed reliability measurement tool for nuclear power plant PLC software using testing-based method

Publications

STVR'22 **MuFBDTester: A mutation-based test sequence generator for FBD programs implementing nuclear power plant software**
Lingjun Liu, Eunkyoung Jee, and Doo-Hwan Bae
Software Testing, Verification and Reliability (STVR), 2022

QRS-C'21 **An Empirical Study of Reliability Analysis for Platooning System-of-Systems**
Sangwon Hyun, **Lingjun Liu**, Hansu Kim, Esther Cho, and Doo-Hwan Bae
International Conference on Software Quality, Reliability and Security Companion (QRS-C), 2021

EnCyCriS'21 **Attack-driven Test Case Generation Approach using Model-checking Technique for Collaborating Systems**
Zelalem Mihret and **Lingjun Liu**
International Workshop on Engineering and Cybersecurity of Critical Systems (EnCyCriS), 2021

SEAMS'21 **Platooning LEGOs: An Open Physical Exemplar for Engineering Self-Adaptive Cyber-Physical Systems-of-Systems**
Yong-Jun Shin, **Lingjun Liu**, Sangwon Hyun, and Doo-Hwan Bae
International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), 2021

KTSDE'21 **MuGenFBD: Automated Mutant Generator for Function Block Diagram Program**
Lingjun Liu, Eunkyoung Jee, and Doo-Hwan Bae
KIPS Transactions on Software and Data Engineering (KTSDE), 2021

KSCE'21 **A Systematic Translation from PAT-based Counterexamples to Viable Test Cases**
Zelalem Mihret, **Lingjun Liu**, Eunkyoung Jee, and Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE), 2021

KSC'20 **Analysis of coupling effect hypothesis for function block diagram programs**
Lingjun Liu, Eunkyoung Jee, and Doo-Hwan Bae
Korea Software Congress (KSC), 2020

KCSE'20 **Automated mutant generation for function block diagram programs**
Lingjun Liu, Eunkyoung Jee, and Doo-Hwan Bae
Korea Conference on Software Engineering (KCSE), 2020

Awards

2021 **Best Artifact Award**, International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)

2020 **Outstanding Short Paper Award**, Korea Conference on Software Engineering (KCSE)

Projects

2021 **Clustering and pattern mining for analyzing interaction failures**

- Researched on time-series clustering and sequence pattern mining, and similarity measures for time-series data in transportation systems

2020 – 2021 **[CybWin] Security testing of air traffic control systems**

- Developed security test generation approach based on attack modeling
- Researched on security attacks in air traffic control systems

2020 – 2021 **[SW Starlab] Simulation-based runtime verification of System-of-Systems**

- Researched on specification patterns and scopes used in runtime verification
- Developed verification property checking for Mass Casualty Incident-Response (MCI-R) system

2019 – 2021 **Developing Automated Mutation-based Test Generation Technique to Maximize the Fault-detection Effectiveness for FBD Programs**

- Developed an automated mutation-adequate test generation tool for FBD programs