

Yong-Jun Shin

✉ yjshin@etri.re.kr | 🏠 <https://yongjunshin.github.io/>

Daejeon, South Korea

SUMMARY

I'm a senior researcher at ETRI, a national research institute in South Korea. I received my Ph.D. in software engineering at KAIST under the guidance of Professor Doo-Hwan Bae in 2023. My Ph.D. research focused on data-driven environment model generation for efficient verification of cyber-physical system (CPS) software. My research interests include model-based software engineering, SW verification and validation, mobility & robotics SW, and edge computing. You can find my publications and academic activities on my homepage.

EXPERIENCE

- **Electronics & Telecommunications Research Institute (ETRI)** 03 2025 - Present
Senior researcher Daejeon, South Korea
- **Electronics & Telecommunications Research Institute (ETRI)** 01 2023 - 02 2025
Researcher Daejeon, South Korea

EDUCATION

- **Korea Advanced Institute of Science and Technology (KAIST)** 03 2017 - 02 2023
Ph.D in software engineering Daejeon, South Korea
 - Thesis: Virtual Environment Model Generation for CPS Goal Verification using Imitation Learning
 - Advisor: Prof. Doo-Hwan Bae
- **Handong Global University** 03 2013 - 02 2017
BS in computer science Pohang, South Korea

HONORS AND AWARDS

- **Best Artifact Paper Award** 2021
16th Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)
- **Best Paper Award** 2019
2019 Korea Computer Congress (KCC)
- **Outstanding Paper Award** 2018
2018 Korea Software Congress (KSC)
- **Best Paper Award** 2018
20th Korea Conference on Software Engineering (KCSE)

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, T=THESIS

- [C.20] Shin, Yong-Jun and Utz, Wilfrid (2025). **A Platform-Independent Software-Intensive Workflow Modeling Language And An Open-Source Visual Programming Tool: A Bottom-Up Approach Using Ontology Integration Of Industrial Workflow Engines**. In *The 40th ACM/SIGAPP Symposium On Applied Computing (SAC)*
- [J.5] Shin, Yong-Jun and Shin, Donghwan and Bae, Doo-Hwan (2024). **Virtual Environment Model Generation for CPS Goal Verification using Imitation Learning**. In *ACM Trans. Embed. Comput. Syst.*
- [T.1] Shin, Yong-Jun (2023). **Data-driven environment model generation using imitation learning for efficient cyber-physical system goal verification**. In *Ph.D. Thesis. Korea Advanced Institute of Science and Technology (KAIST)*
- [C.19] Cho, Esther and Shin, Yong-Jun and Hyun, Sangwon and Kim, Hansu and Bae, Doo-Hwan (2022). **Automatic Generation of Metamorphic Relations for a Cyber-Physical System-of-Systems Using Genetic Algorithm**. In *2022 29th Asia-Pacific Software Engineering Conference (APSEC)*
- [C.18] Cho, Esther and Kim, Hansu and Shin, Yong-Jun and Bae, Doo-Hwan (2022). **Automatically Generating Behavior Descriptions of a Cyber-Physical System-of-Systems**. In *Korea Computer Congress (KCC)*
- [C.17] Shin, Yong-Jun and Cho, Esther and Kim, Hansu and Bae, Doo-Hwan (2022). **Hands-on field operational test dataset of a multi-controller cps: A modeled case study on autonomous driving**. In *2022 17th Annual System of Systems Engineering Conference (SOSE)*

- [C.16] Shin, Yong-Jun and Bae, Joon-Young and Bae, Doo-Hwan (2021). **Concepts and models of environment of self-adaptive systems: A systematic literature review**. In *2021 28th Asia-Pacific Software Engineering Conference (APSEC)*
- [C.15] Baek, Young-Min and Cho, Eunho and Shin, Yong-Jun and Bae, Doo-Hwan (2021). **A Modeling Method for Representation of Geographical Information of a System-of-Systems**. In *2021 16th International Conference of System of Systems Engineering (SoSE)*
- [C.14] Shin, Seungchul and Hyun, Sangwon and Shin, Yong-Jun and Song, Jiyoung and Bae, Doo-Hwan (2021). **Uncertainty-based fault type identification for fault knowledge base generation in system of systems**. In *2021 16th International Conference of System of Systems Engineering (SoSE)*
- [C.13] Shin, Yong-Jun and Liu, Lingjun and Hyun, Sangwon and Bae, Doo-Hwan (2021). **Platooning legos: An open physical exemplar for engineering self-adaptive cyber-physical systems-of-systems**. In *2021 International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*
- [C.12] Shin, Yong-Jun and Cho, Eunho and Bae, Doo-Hwan (2021). **PASTA: An efficient proactive adaptation approach based on statistical model checking for self-adaptive systems**. In *International Conference on Fundamental Approaches to Software Engineering (FASE)*
- [C.11] Baek, Young-Min and Mihret, Zelalem and Shin, Yong-Jun and Bae, Doo-Hwan (2020). **A Modeling Method for Model-based Analysis and Design of a System-of-Systems**. In *2020 27th Asia-Pacific Software Engineering Conference (APSEC)*
- [C.10] Park, Su-Min and Shin, Yong-Jun and Hyun, Sangwon and Bae, Doo-Hwan (2020). **Simva-sos: Simulation-based verification and analysis for system-of-systems**. In *2020 IEEE 15th International Conference of System of Systems Engineering (SoSE)*
- [J.4] Shin, Seungchul and Hyun, Sangwon and Shin, Yong-Jun and Song, Jiyoung and Bae, Doo-Hwan (2019). **Manifestation Location-based Classification of Uncertainty Factors Considering Characteristics of System-of-Systemss**. In *KIISE Transactions on Computing Practices*
- [J.3] Hyun, Sangwon and Shin, Yong-Jun and Bae, Doo-Hwan (2019). **Analysis of Utilization Methods of the Statistical Model Checking Results for Localizing Faults on System of Systems**. In *Journal of KIISE*
- [C.9] Cho, Eunho and Shin, Yong-Jun and Jee, Eunyoung and Bae, Doo-Hwan (2019). **Comparative Analysis of fault-attack tree based safety and security assessment approaches**. In *Korea Computer Congress (KCC)*
- [C.8] Hyun, Sangwon and Shin, Yong-Jun and Bae, Doo-Hwan (2019). **Analysis of Utilization Methods of Statistical Model Checking Results for Localizing Faults on System of Systems**. In *Korea Computer Congress (KCC)*
- [C.7] Shin, Yong-Jun and Baek, Young-Min and Jee, Eunyoung and Bae, Doo-Hwan (2019). **Data-driven environment modeling for adaptive system-of-systems**. In *Proceedings of the 34th ACM/SIGAPP Symposium on Applied Computing (SAC)*
- [C.6] Shin, Yong-Jun and Hyun, Sangwon and Baek, Young-Min and Bae, Doo-Hwan (2019). **Spectrum-based fault localization on a collaboration graph of a system-of-systems**. In *2019 14th Annual Conference System of Systems Engineering (SoSE)*
- [C.5] Kim, Tae-Hwan and Cho, Eunho and Shin, Yong-Jun and Bae, Doo-Hwan (2018). **Data-Driven Traffic Environment System-Dynamics Model Generation & Inference Method**. In *Korea Software Congress (KSC)*
- [C.4] Baek, Young-Min and Park, Su-Min and Shin, Yong-Jun and Bae, Doo-Hwan (2018). **A meta-model for representing system-of-systems ontologies**. In *Proceedings of the 6th International Workshop on Software Engineering for Systems-of-Systems (SESoS)*
- [J.2] Baek, Young-Min and Park, Su-Min and Shin, Yong-Jun and Bae, Doo-Hwan (2018). **Analysis of Case Scenario to Develop a System of Systems Meta-model for Ontology Representation**. In *Journal of KIISE*
- [C.3] Baek, Young-Min and Park, Su-Min and Shin, Yong-Jun and Bae, Doo-Hwan (2018). **Scenario-based Analysis of System-of-Systems Meta-model and Applicability Analysis for Statistical Verification**. In *Korea Conference on Software Engineering (KCSE)*
- [C.2] Baek, Young-Min and Park, Su-Min and Shin, Yong-Jun and Bae, Doo-Hwan (2018). **Development of Ontology-based System-of-Systems Meta-model Based on the Analysis of SoS Case Scenario**. In *Korea Conference on Software Engineering (KCSE)*
- [J.1] Kim, Do Hyun and Kim, Jung Eun and Song, Ji Hag and Shin, Yong Jun and Hwang, Sung Soo (2017). **Image-based Intelligent Surveillance System Using Unmanned Aircraft**. In *Journal of Korea Multimedia Society*
- [C.1] Shin, Yong-Jun and Yang, Jiyoung and Choi, Changbeom (2015). **Research on Flexible Method for Simulation Initialization Using C-Interpreter**. In *Korean Institute of Industrial Engineers (KIIE)*

ACADEMIC SERVICES

- **Program Committee** 2024 - 2025
International Workshop on Software Engineering for Systems-of-Systems and Software Ecosystems (SESoS)
- **Program Committee** 2024 - 2025
International Conference on Software Engineering & Knowledge Engineering (SEKE)
- **Reviewer** 2023
Journal of Software: Evolution and Process - special issue on 'Software Engineering for Systems-of-Systems and Software Ecosystems'
- **Live! Team Korea** 2020
The 42th International Conference on Software Engineering (ICSE)