Jiho Shin

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Education

York University, Toronto **ON, Canada**
Dept. of Electrical Engineering and Computer Science ***Ph.D.*** 2021–2025
Research Field: AI/ML for Software Engineering, Code Generation, Automated Software Testing, LLM for SE
Supervisor: *Dr. Song Wang* and *Dr. Hadi Hemmati*
Thesis: Investigating the Effectiveness of Large Language Models in Automated Software Engineering

Handong Global University, Pohang **South Korea**
Dept. of Computer Science and Electrical Engineering ***M.Sc.*** 2019–2021
Research Field: Code Generation, Actionable and Explainable Defect Prediction
Supervisor: *Dr. Jaechang Nam*
Thesis: Actionable Defect Prediction

Handong Global University, Pohang **South Korea**
Dept. of Computer Science and Electrical Engineering ***B.Sc.*** 2012–2019
Specialization: Web Applications, Human-Computer Interaction, Computer Vision

Experience

Queen's University, Kingston **ON, Canada**
Postdoctoral Research Fellow Sep 2025–present
– Conducting and advising graduate researchers to conduct Agentic SE-related studies at SAIL/MCIS Lab.

Turing, Palo Alto **CA, USA**
RLEF/CodeGenAgent Lead (Remote) Jan 2025–May 2025
– Synthesized Chain-of-Thought (CoT) code data for reinforcement learning with execution feedback (RLEF).
– Improved Code Generation Agents by reinforcing the soundness/completeness of the test generation module.

HGS (Hinduja Group Companies), Charlottetwon **PE, Canada**
Applied AI Engineering Intern (Remote) Oct 2024–Feb 2025
– Developed a ChatBot for the job application process for prospective workers using Microsoft Copilot Studio.
– Enhanced their ChatBot for the company's homepage to guide prospective clients with lead and sales details.

York University, Toronto **ON, Canada**
AI4SE & SE4AI Researcher Sep 2021–present
– **AI for Software Engineering (AI4SE):** Build agents and LLM frameworks that automate testing, generate code, and repair using data mined from software repositories, improving code quality and development efficiency.
– **Software Engineering for AI (SE4AI):** Engineer reliable, secure, and interpretable AI systems by testing, validating, and benchmarking LLMs and ML/DL libraries using artifacts from code repositories, issue trackers, and Q&A sites.
Teaching Assistant Sep 2021–present
– Served as teaching assistant and head TA, coordinating graders, office hours, and lab materials (lab tests and lab lectures) for Software Design, Software Engineering Testing, and Software Tools.

Handong Global University, Pohang **South Korea**
Software Engineering Researcher Mar 2019–Feb 2021
– Proposed an **actionable defect prediction framework** improving the F1 score by **22%** over baseline ML models.
– Conducted the **first survey** on **32** papers that **generate source code** from **natural language descriptions**.
Teaching Assistant Sep 2018–Dec 2020
– Assisted in grading, developing lecture materials, and holding office hours for Computer Vision, Data Structures, C Programming, and Software Engineering.

Publications

1. **Retrieval-Augmented Test Generation: How Far Are We?**
   Jiho Shin, NS Harzevili, R Aleithan, H Hemmati, S Wang, **ICSE 2026** (to appear)
2. ***BloomAPR: A Bloom's Taxonomy-based Framework for Assessing LLM-Powered APR Solutions***
   Y Ma, **Jiho Shin**, LD Silva, ZM Jiang, S Wang, F Khomh, SH Tan, arXiv 2025 (Under Review)
3. ***Toward Automated Validation of Language Model Synthesized Test Cases using Semantic Entropy***
   H Taherkhani, **Jiho Shin**, MA Tahir, MRH Misu, Vs Gattani, H Hemmati, arXiv 2025 (Under Review)
4. ***Surveying the Benchmarking Landscape of Large Language Models in Code Intelligence***
   M Abdollahi, R Zhang, NS Harzevili, **Jiho Shin**, S Wang, H Hemmati, HAL 2025 (Under Review)
5. ***StaAgent: An Agentic Framework for Testing Static Analyzers***
   E Nnorom, MBU Ahmed, **Jiho Shin**, HV Pham, S Wang, arXiv 2025 (Under Review)
6. ***SecVulEval: Benchmarking LLMs for Real-World C/C++ Vulnerability Detection***
   MBU Ahmed, NS Harzevili, **Jiho Shin**, HV Pham, S Wang, arXiv 2025 (Under Review)
7. ***Pre-trained Models for Bytecode Instructions***
   DG Kim, TM Kim, **Jiho Shin**, S Wang, HY Choi, JC Nam, **ICST-Short Paper 2025**
8. ***Prompt Engineering or Fine-Tuning: An Empirical Assessment of LLMs for Code***
   Jiho Shin, C Tang, T Mohati, M Nayebi, S Wang, H Hemmati, **MSR 2025**
9. **Checker Bug Detection and Repair in Deep Learning Libraries**
   Harzevili, Mohajer, **Shin**, Wei, Uddin, Yang, Wang, Wang, Jiang, Nagappan, arXiv 2024 (Under Review)
10. ***Assessing Evaluation Metrics for Neural Test Oracle Generation***
    Jiho Shin, H Hemmati, MS Wei, S Wang, **TSE 2024 (ICSE-JF'25)**
11. ***Domain Adaptation for Code Model-based Unit Test Case Generation***
    Jiho Shin, S Hashtroudi, H Hemmati, S Wang, **ISSTA 2024**
12. ***The Good, the Bad, and the Missing: Neural Code Generation for Machine Learning Tasks***
    Jiho Shin, MS Wei, JJ Wang, L Shi, S Wang, **TOSEM 2023**
13. ***An Empirical Study on the Stability of Explainable Software Defect Prediction***
    Jiho Shin, R Aleithan, JC Nam, JJ Wang, NS Harzevili, S Wang, **APSEC 2023**
    🏆 Distinguished Paper Award
14. ***Automatic Static Vulnerability Detection for Machine Learning Libraries: Are We There Yet?***
    NS Harzevili, **Jiho Shin**, JJ Wang, S Wang, N Nagappan, **ISSRE 2023**
15. ***Characterizing and Understanding Software Security Vulnerabilities in Machine Learning Libraries***
    NS Harzevili, **Jiho Shin**, JJ Wang, S Wang, N Nagappan, **MSR 2023**
16. ***API Recommendation for Machine Learning Libraries: How Far Are We?***
    MS Wei, YC Huang, JJ Wang, **Jiho Shin**, NS Harzevili, S Wang, **ESEC/FSE 2022**
17. ***A Survey of Automatic Code Generation from Natural Language***
    Jiho Shin and JC Nam, **JIPS 2021**
18. ***Similar Patch Recommendation for Actionable Defect Prediction***
    Jiho Shin and JC Nam, **KCSE 2020**
    🏆 Distinguished Paper Award

Awards

Mitacs Business Strategy Internship - (15K CAD)	Oct 2024
Academic Excellence Fund - Research funding from York University (2K CAD).	Jan 2024
APSEC - Distinguished Paper Award from APSEC'23 technical track.	Dec 2023
YorkU Graduate Fellowship - Paid research program (38K per year for 4 years).	Sep 2021
KCSE - Distinguished Paper Award from KCSE'20 short paper track.	Feb 2020

Attended Conferences | Consortium | Boot Camps

MSR'25 - attended the conference to present a Technical Track paper.	Apr 2025
ICSE'25 - attended the conference to present a Journal First paper.	Apr 2025
AIware'24 - attended the AIware Leadership Bootcamp	Nov 2024
ISSTA'24 - presented the paper about unit test case generation using task&project domain adaption.	Sep 2024

ICST'24 - organized and attended the conference as a web chair and a student volunteer. May 2024
APSEC'23 - presented the XDP (eXplainable Defect Prediction) paper. Dec 2023
CSER'22-24 - presented multiple talks and posters. 2022-2024
KCSE'20 - presented the idea of commit suggestions for actionable defect prediction. Feb 2020

Academic Services

Organizing Committee
[ICST'24] Web Chair, 17th IEEE International Conference on Software Testing, Verification and Validation.

Student Volunteer
[ICSE'25] SV, 50th IEEE/ACM International Conference on Software Engineering.
[ICST'24] SV, 17th IEEE International Conference on Software Testing, Verification and Validation.

Reviewer/PC
[IEEE Software'25] Reviewer, Served as a reviewer for IEEE Software.
[JSS'25] Reviewer, Served as a reviewer for Journal of Systems and Software.
[EMSE'25] Reviewer, Served as a reviewer for Empirical Software Engineering.
[STVR'25] Reviewer, Served as a reviewer for Software Testing, Verification and Reliability.
[COMPSAC-SETA'25] PC, Served as a reviewer for Symposium on Software Engineering Technologies & Applications.
[TOSEM'25] Reviewer, Served as a reviewer for ACM Transactions on Software Engineering and Methodology.
[MSR'25] Junior PC, Served as a Junior PC for MSR'25 (accept. rate: 111/262=42.4%).
[ICSE'25] Shadow PC, Served as a Shadow PC for ICSE'25 (accept. rate: 50/299=16.7%).
[TSE'24-25] Reviewer, Served as a reviewer for IEEE Transactions on Software Engineering.