

Yu Liu

Research Scientist

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sweetStreet
<http://sweetstreet.github.io>

Research Interests

Machine Learning, Software Testing, Program Analysis and Compiler.

Professional Experience

- July 2024–Now **Research Scientist, Meta**
- Automated accuracy validation of models on MTIA accelerator, comparing them against those on CPU and GPU.
 - Developed a tool to debug ML models with dynamic shapes.
 - Streamlined early-stage Ads models enablement on MTIA accelerator.
- Jun–Sep 2023 **Software Engineer Intern, Google**
- Identified input and output nodes of ML model layers in TensorFlow graphs using C++.
 - Implemented a service module with frameworks based on **Scaffolding** and **Protocol Buffers** to populate important layers to front end.
- May–Aug 2021 **Research Intern, IBM**
- Generated summarization for UI tests with probabilistic context-free grammar(PCFG) based on clickable and its context.
- May–Aug 2020 **Software Engineer Intern, Google**
- Wrote integration tests for auto releases to validate data consistency among UI, database and external service.
 - Implemented a service module with frameworks based on **Guice** and **Protocol Buffers** to make RPC from front end to stubby service.
- Jul–Aug 2019 **Software Engineer Intern, Huatai Securities**
- Analyzed public sentiment by model of **TextCNN** and **BERT**. Embedded sentences into vectors with **TF-IDF**. Compared **cosine similarity** of vectors to realize **word sense disambiguation**. Established a dictionary of companies and real controllers. Adjusted importance of words according to their locations and frequency of appearance.

Education

- 2019–2024 **Ph.D., The University of Texas at Austin**
Supervisor. Prof. Milos Gligoric Co-supervisor. Prof. Owolabi Legunsen
- 2015–2019 **B.Eng., Nanjing University**

Skills

- Languages C++, Python, Java, Bash, SQL, C, Dart.
- Tools PyTorch, HuggingFace, pytest, Docker, Git, Linux, JUnit, ANTLR, JavaParser, ASM, SAP ERP.

Publications

- [10] Linghan Zhong, Samuel Yuan, Jiyang Zhang, **Yu Liu**, Pengyu Nie, Junyi Jessy Li, and Milos Gligoric. A tool for generating exceptional behavior tests with large language models. In *FSE, Tool Demonstrations*. 2025.
- [9] Jiyang Zhang, **Yu Liu**, Pengyu Nie, Junyi Jessy Li, and Milos Gligoric. Exlong: Generating exceptional behavior tests with reasoning augmented large language models. In *ICSE*, 1–10. 2025.
- [8] **Yu Liu**. *Inline Tests*. Ph.D. thesis, 2024.
- [7] **Yu Liu**, Aditya Thimmaiah, Owolabi Legunsen, and Milos Gligoric. Exli: An inline-test generation tool for java. In *FSE, Tool Demonstrations*, 1–5. 2024.
- [6] **Yu Liu**, Pengyu Nie, Anna Guo, Milos Gligoric, and Owolabi Legunsen. Extracting inline tests from unit tests. In *ISSTA*, 1–10. 2023.
- [5] **Yu Liu**, Jiyang Zhang, Pengyu Nie, Milos Gligoric, and Owolabi Legunsen. More precise regression test selection via reasoning about semantics-modifying changes. In *ISSTA*, 1–10. 2023. This paper won an **ACM SIGSOFT Distinguished Paper Award**.
- [4] **Yu Liu**, Zachary Thurston, Alan Han, Pengyu Nie, Milos Gligoric, and Owolabi Legunsen. pytest-inline: An inline testing tool for python. In *ICSE Demo*, 1–4. 2023.
- [3] **Yu Liu**, Pengyu Nie, Owolabi Legunsen, and Milos Gligoric. Inline tests. In *ASE*, 1–11. 2022.
- [2] **Yu Liu**, Rahulkrishna Yandrapally, Anup K. Kalia, Saurabh Sinha, Rachel Tzoref-Brill, and Ali Mesbah. Crawlable: Computing natural-language labels for UI test cases. In *AST*, 103–114. 2022.
- [1] Jiyang Zhang, **Yu Liu**, Milos Gligoric, Owolabi Legunsen, and August Shi. Comparing and combining analysis-based and learning-based regression test selection. In *AST*, 17–28. 2022.

Scholarships and Awards

- 2023 Graduate School Continuing Fellowship, The University of Texas at Austin
- 2020 Grace Hopper Scholarships, Google
- 2019 Outstanding Graduates, Nanjing University

Open Source Contributions

- 2023 **Exli**, a tool for extracting inline tests from unit tests - <https://github.com/EngineeringSoftware/exli> (paper [6])
- 2022 **pytest-inline**, a Pytest plugin for inline testing - <https://github.com/pytest-dev/pytest-inline> (paper [4])