Shiwen Shan

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Education

Sept 2020 – Current   **Undergraduate, Sun Yat-Sen University** in Software Engineering.
A fourth-year undergraduate student, ranked 3/70.

Research Interests

- **Distributed Systems**, **Operating Systems**
- **Bug Localization/Diagnosis**, **Log Analytics**
- **Performance**, **Machine Learning**

Projects

Aug. 2023 – Dec. 2023   **Configuration Error Localization via Logs and LLMs**
First-Author | ISSTA '24 (CCF-A) Accepted
Distributed Systems & Fault Localization & Log Analytics & Machine Learning
🔗 *preprint* 🔗 *code*
We conduct a preliminary study to identify the opportunities and challenges to localize configuration errors via Logs. Based on the gained insights, we propose LogConfigLocalizer, an LLM-based tool to localize configuration errors via log analytics. Evaluations on Hadoop workloads and comparison with baseline tool showcase the effectiveness of LogConfigLocalizer. We also demonstrate its feasibility by conducting a practical case study.

Feb. 2023 – Aug. 2023   **Fuzzing Technology-based Automatic Log Generation Tool**
Undergraduate Thesis
Distributed System & Log Generation & Fuzzing Technology
There are two components of the tool LogFuzz. The first component is to identify and mark the log-generation-related methods (i.e., LogMethods) via static program analysis. The second component is the dynamic execution facilitated by fuzzing technology. We employ fuzzing technology to establish various anomalous scenarios such as configuration errors, network delay, etc.

Feb. 2023   **A Prediction Model based on Graph Flowing**
Finalist in 2023 Mathematical Contest In Modeling
Graph & Correlation Analysis & Prediction Model
There are three phases for prediction. The first two phases aim at identifying the correlations among indicators and the last phase initialized the indicators with assigned values and regard the impacts one indicator on another as parameters.

Projects (continued)

Jul. 2022 – Sept. 2022   🔖   **Evlog: Identifying Anomalous Logs over Software Evolution**
Fourth-Author | ISSRE '23 `(CCF-B)` Accepted
Distributed Systems & Log Analytics & Machine Learning
🔗 *preprint*
Utilize transfer learning technology to identify anomalous logs under software evolution scenarios.

Dec. 2021 – Apr. 2022   🔖   **Working Set Size Estimation via eBPF**
Fourth-Author | ICSS '22 Accepted
Operating Systems & Memory Management & Machine Learning
🔗 *preprint*
Taking advantage of eBPF technology to hook the page `fault` system call to collect entries and then adopt decision-tree technology to predict the working set size.

Research Publications

Conference Proceedings

1   **Shan, Shiwen**, Y. Huo, Y. Su, Y. Li, D. Li, and Z. Zheng, "Face it yourselves: An llm-based two-stage strategy to localize configuration errors via logs," in *2024 IEEE 33rd International Symposium on Software Testing and Analysis (ISSTA)*, IEEE, 2024. 🔗 DOI: https://doi.org/10.1145/3650212.3652106.

2   Y. Huo, C. Lee, Y. Su, **Shan, Shiwen**, J. Liu, and M. R. Lyu, "Evlog: Identifying anomalous logs over software evolution," in *2023 IEEE 34th International Symposium on Software Reliability Engineering (ISSRE)*, 2023, pp. 391–402. 🔗 DOI: 10.1109/ISSRE59848.2023.00018.

3   Z. Lian, Y. Li, Z. Chen, **Shan, Shiwen**, B. Han, and Y. Su, "Ebpf-based working set size estimation in memory management," in *2022 International Conference on Service Science (ICSS)*, IEEE, 2022, pp. 188–195.

Skills

Languages   🔖   **E**nglish, Mandarin, Cantonese and a little bit of German.
Coding   🔖   Python, RUST, C/C++, Java, Shell.
Tools   🔖   Linux, DOCKER, Git, Hadoop.
Misc   🔖   Academic reading & writing, LaTeX typesetting, Markdown.

Miscellaneous Experience

Honour

2023   🔖   **ZhaoLian Scholarship Owner**, Sun Yat-sen University.
   🔖   **The First Prize of Scholarship**, Sun Yat-sen University.
2022   🔖   **JinDao Scholarship Owner**, Sun Yat-sen University.
2021 & 2022   🔖   **The Second Prize of Scholarship**, Sun Yat-sen University.

Miscellaneous Experience (continued)

Awards and Achievements

2023   🔖 **Finalist**, Mathematical Contest In Modeling, COMAP.

Extracurricular Activities

2023 & 2024   🔖 **Teaching Assistant**. *Principles of Operating Systems*, School of Software Engineering, Sun Yat-sen University.

2022 & 2023   🔖 **Visiting Student**. ARISE Lab, Chinese University of Hong Kong.

2020 – Current   🔖 **Student Assistant**. Network and Information Center of Sun Yat-sen University.