

## Zijian Luo

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### Education Background

- **20/03/2024-Current University of Sydney**  
*Major:* Computer Science  
*Degree:* MPhil. (Master by Research)  
*Research Supervisors:* Rahul Gopinath, Xi WU
- **01/09/2018-30/06/2022 Hebei University**  
*Major:* Software Engineering  
*Degree:* Bachelor's Degree  
*Main Courses:* **Data structure; Algorithm; Network; Operating System; Compiler; Architecture of Computer**  
*GPA:* 82.08%

### Work Experience

- **May. 2025 – Current**  
**Company:** Oracle  
**Role:** Research Assistant@ Oracle Labs, Brisbane (full-time)  
**Responsibility:** Leveraging LLMs to solve real-world software engineering tasks or defects including bug localization, bug-reproducing, Automated Program Repair.  
**Skill:** **LLM; Symbolic Execution; Static Analysis; Automated Program Repair; Knowledge Graph**

### Publications:

- **Automatic Data Repair without Format Specifications** *ISSRE25(Core A)*  
*Status:* Accepted  
*Responsibilities:* Perform black-box testing on the parser and repair data based on feedback, without knowing the input specification.  
*Paper:* <https://rahul.gopinath.org/resources/issre2025/luo2025automatic.pdf>  
**Skill:** **Program Input Repair; Black-box Debugging; Parser**
- **Assessing Reliability of Statistical Maximum Coverage Estimators in Fuzzing** *ICSME25(Core A)*  
*Status:* Accepted  
*Responsibilities:* Random program and bug generation for evaluating fuzzing  
*Paper:* <https://arxiv.org/abs/2507.17093>  
**Skill:** **Fuzzing; Program Synthesis**

### Projects

- **March 2025 – Aug 2025 Grammar-bench: A Random LL(1) Parser Generator for APR Benchmark**  
*Purpose:* A randomized, anonymized benchmarking framework for software engineering tasks. Grammar-bench builds a large number of verifiable tasks by “randomly generating grammars → generating parsers → injecting minimal faults → auto-generating test cases.” It aims to fairly evaluate Large Language Models (LLMs) or autonomous agents on program repair and patch generation without overfitting to public datasets.  
*Project repo:* [https://github.com/Jacksadventure/Grammar\\_bench](https://github.com/Jacksadventure/Grammar_bench)  
**Skill:** **LL(1) Parser; Agent; LLM; Program Synthesis**
- **Aug 2025 – Aug 2025 Readme2artifacts: An Automated Docker Builder & Tester Agent**  
*Purpose:* An LLM-powered automation agent that generates a Docker file from a README, builds the image, runs tests.  
*Project repo:* <https://github.com/Jacksadventure/Readme2artifacts>  
**Skill:** **Agent; docker; LLM**
- **Mar 2021- Jul 2021 Development of Programming Language “Deeplang”**  
*Purpose:* Deeplang is a memory-safe multi-paradigm programming language for embedded scenarios.  
*Responsibilities:* Implement the back-end virtual machine part that interprets the WASM code generated by the front-end for execution  
*Main Page:* <https://deeplang.org>  
**Skill:** **C Programming Language; Webassembly**
- **May 2024 - Jul 2024 Building Virtual Machines With Threaded Models**  
*Purpose:* Evaluate how threading models impact the performance of virtual machines.  
*Responsibilities:* 1. Instruction set design 2.Implementing virtual machines with threading models including direct, indirect, subroutine...threading models 3. Having benchmark with random-generated program.

Repo: <https://github.com/Jacksadventure/ThreadedVM>

Skill: C/C++; Programming Language; Virtual Machine;

➤ **Nov. 2024 – Dec. 2024 AI Grammar-generator for Grammar-based fuzzing**

*Description:* An experimental toy-level tool that uses LLMs to infer grammar specifications, enabling efficient and effective fuzzing of targets without prior specifications.

Repo: <https://github.com/Jacksadventure/AutoGrammar>

Skill: Fuzzing; LLM; Few Shot Learning; software security

**Awards/Scholarship**

- 2023-2024 “Summer Research Internship Scholarship” in University of Sydney

**School / Social / NGO Activities**

- **The President of USYD Toastmasters club(Belongs to Toastmasters International, NGO).**

*Responsibilities:* Manage all education-related matters in the club and supervise members to complete their study program

**Skills**

*Fuzzing test; LLVM; Symbolic execution; Dataflow analysis ; Dynamic software analysis; Programming language toolchain development; Ghidra; Pwndbg; Reverse Engineering ; Operating System development; Agent; LLM; Docker*