

LING JIANG

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📍 Shanghai, China 🌐 [Github](#) 🏠 [Homepage](#)

EDUCATION

Southern University of Science and Technology Shenzhen, China
MSE in Computer Science and Technology, GPA: 3.79 / 4.0 (ranking ~5%) Sep.2021 - Jun.2024
Courses: Advanced Algorithms, Advanced Artificial Intelligence, Advanced Optimization Algorithms, Intelligent Data Analytics

Southern University of Science and Technology Shenzhen, China
BSE in Computer Science and Technology, GPA: 3.84 / 4.0 (ranking ~5%) Sep.2017 - Jun.2021
Courses: Operating System, Software Engineering, Software Testing, Machine Learning, Algorithms, Networking, Database

PUBLICATIONS

[ICSE'2024] **Ling Jiang**, Junwen An, Huihui Huang, Qiyi Tang, Sen Nie, Shi Wu, and Yuqun Zhang. "BinaryAI: Binary Software Composition Analysis via Intelligent Binary Source Code Matching." [paper] [code] [slide] [doi]

[ISSTA'2023] **Ling Jiang**, Hengchen Yuan, Qiyi Tang, Sen Nie, Shi Wu, and Yuqun Zhang. "Third-party Library Dependency for Large-scale SCA in the C/C++ Ecosystem: How Far Are We?" [paper] [code] [slide] [doi]

[ICSE'2023] **Ling Jiang**, Hengchen Yuan, Mingyuan Wu, Lingming Zhang, and Yuqun Zhang. "Evaluating and Improving Hybrid Fuzzing." [paper] [code] [slide] [doi]

[ICSE'2022] Mingyuan Wu, **Ling Jiang**, Jiahong Xiang, Yanwei Huang, Heming Cui, Lingming Zhang, and Yuqun Zhang. "One Fuzzing Strategy to Rule Them All." [paper] [code] [doi]

[ICSE'2022] Mingyuan Wu, **Ling Jiang**, Jiahong Xiang, Yuqun Zhang, Guowei Yang, Huixin Ma, Sen Nie, Shi Wu, Heming Cui, and Lingming Zhang. "Evaluating and Improving Neural Program-smoothing-based Fuzzing." [paper] [code] [doi]

RESEARCH EXPERIENCE

Tencent Security Keen Lab

Supervised by Tencent Security Researchers Sen Nie and Qiyi Tang Jun.2022 - Aug.2023

- 2022 Tencent Rhino-Bird Elite Training Program (winning distinguished scholarship [link])
- Designed algorithm to construct third-party library dependency in C/C++ ecosystem via function-level code clone detection and graph centrality analysis for the downstream binary software composition analysis [link]
- Released the state-of-the-art binary SCA tool that outperforms Black Duck@Synopsys [link]

SUSTech ARiSE Lab

Supervised by Prof. Yuqun Zhang Sep.2020 - Jun.2022

- Worked on the effectiveness of binary fuzzing and proposed two novel fuzzing tools with increased performance, including evolutionary-based fuzzing and gradient-guided fuzzing based on neural program smoothing
- Conducted an extensive study of hybrid fuzzing and proposed a novel hybrid fuzzer, which outperforms existing techniques and detects vulnerabilities with new CVEs (cooperated with Prof. Lingming Zhang, UIUC)

WORK EXPERIENCE

Kwai Intelligent R&D Center

Algorithm Engineer Intern Beijing, China
Aug.2023 - May.2024

- Contributed to **Kwaipilot**, an intelligent code assistant based on LLM with code completion and chat capabilities.
- Conducted incremental training & SFT on base models (CodeLlama, DeepSeek, etc) with 100B domain code data
- Built prompt engineering (RAG, LSP, Repo-level, etc) and contextual filtering to enhance code completion
- During the internship, DAU increased from 60 to 3,500+, and the apply rate from 5% to 35%

Tencent Security Keen Lab

Security Engineer Intern

Shanghai, China

Jun.2022 - Aug.2023

- Worked on **BinaryAI**, the binary file security analysis platform developed by Keen Security Lab, which is based on AI security for the applications such as software composition analysis (SCA) and malware analysis
- Contributed to the training of **BAI**, the embedding model based on LLM and contrastive representation learning for aligning binary and source functions in a single vector space, which powers BinaryAI
- Designed and deployed new algorithms for BAI's downstream tasks, including SCA and reverse engineering

Tencent PCG

Software Development Engineer Intern

Shenzhen, China

Jul.2020 - Sep.2020

- Back-end development for Tencent QQ client, including social platform and value-added services
- Built testing frameworks and CI/CD pipelines that automate software delivery

SELECTED PROJECTS

SPL Compiler

- Built compiler for a C-like programming language that compromises advanced features in C standard
- Implemented lexical and syntax analysis, semantics checking, IR and MIPS assembly code generation
- Supported advanced features like an n-D array, Loop, Structural equivalence, and scope checking

SUSTech Course Schema

- Web application for staff to check & download course schemas in high concurrency, deployed on distributed servers
- Responsible for back-end development, technology stack includes SpringBoot, MySQL, Redis, MQ, ES, etc

Genetic Algorithm for TSP

- Adopted VNS-GA and IPGA to solve the multiple traveling salesman problem with the initial population based on polar coordinate classification and elitist selection
- Adopted non-dominated sorting genetic algorithm (NSGA-II) to solve the multi-objective traveling salesman problem and improved efficiency for the crowding distance sorting

OPEN-SOURCE CONTRIBUTIONS

Open-source Projects

- **FuzzBench**: Integrated our fuzzers into the Google fuzzing benchmarks to perform large-scale evaluation
- **SymCC**, **QSYM**: Improved SMT module of concolic executor to solve specific branches with increased efficiency

Selected Vulnerability Discoveries

- **CVE-2022-38533**: Heap-buffer-overflow vulnerability from the program strip via crafted files in GNU binutils
- **CVE-2022-37165**: Use of uninitialized value triggered while executing jhead with the crafted JPEG files

SKILLS

General: Python, Java, C/C++, Golang, Rust, Shell, SQL, Git, LaTeX, etc
MLOps: Pytorch, WandB, Deepspeed, Megatron, vLLM, Dify, LangChain, LlamaIndex, DSPy, Milvus, etc
DevOps: SpringBoot, Django, gRPC, Docker, Kubernetes, Spark, Redis, RabbitMQ, ElasticSearch, etc
SE & Security: IDA Pro, Ghidra, LLVM, Z3, LibFuzzer, Sanitizers, Intel Pin, KLEE, etc

HONORS & AWARDS

- Tencent Rhino-Bird Elite Talent Training Program Distinguished Scholarship (6 out of 70+) - 2022
- Outstanding Graduate Student Award & Undergraduate Thesis (~10%), CSE@SUSTech - 2021
- First-Class & Second-Class Merit Student Scholarship, SUSTech - 2018 ~ 2020

MENTORING

- **Hengchen Yuan** (Summer 2022) SUSTech \mapsto UT Austin PhD
- **Junwen An** (Summer 2023) SUSTech \mapsto NUS PhD
- **Huihui Huang** (Summer 2023) SUSTech \mapsto SMU PhD