Zhijie Liu

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PERSONAL PROFILE

Energetic, creative, and responsible student, currently studying at **ShanghaiTech University** in a graduate program (Sep. 2022 - Jul. 2025) and interning at Tencent Keen Security Lab (Aug. 2023 - current), under the supervision of **Prof. Yutian Tang**, **Prof. Liangfeng Zhang**, **Researcher Sen Nie**, and **Researcher Qiyi Tang**. Passionate about software engineering and security, having three years of expertise, and specializing in Program and Binary Analysis, Fuzzing/Testing, Malware Analysis, Binary Code Similarity Analysis (BCSA), Large Language Model (LLM), and so forth.

EDUCATION

ShanghaiTech University   *Pudong, Shanghai*

Master of Science in Computer Science (in English and Chinese), GPA: 3.92/4.0, Specialized Course GPA: 4.0/4.0   *September 2022 - July 2025*

- **Courses 2022-2023:** Program Analysis (A+), Algorithm Design (A), Machine Learning (A), Cybersecurity (A+)
- **Courses 2023-2024:** Cryptography (A+), Computer-aided Verification (A)

Chang'an University   *Xi'an, Shaanxi*

Bachelor of Science in Computer Science, GPA: 4.20/5.0 (ranking 1th)   *August 2018 - July 2022*

- **Courses:** Compiler, Networking, Operating System, Database, Computer Architecture, etc.
- **Projects:** Remote Control System, MiniHook for Windows, etc.

PUBLICATIONS

CONFERENCE PROCEEDINGS

Enhancing Malware Detection for Android Apps: Detecting Fine-granularity Malicious Components
  Zhijie Liu, Liang Feng Zhang, Yutian Tang*
  2023 38th IEEE/ACM International Conference on Automated Software Engineering (ASE), 2023

JOURNAL ARTICLES

No Need to Lift a Finger Anymore? Assessing the Quality of Code Generation by ChatGPT
  Zhijie Liu, Yutian Tang*, Xiapu Luo, Zhou Yuming, Liangfeng Zhang
  IEEE Transactions on Software Engineering (2024). 2024

ChatGPT vs SBST: A Comparative Assessment of Unit Test Suite Generation
  Yutian Tang*, Zhijie Liu, Zhichao Zhou, Xiapu Luo
  IEEE Transactions on Software Engineering (2024). 2024

UNDER REVIEW

LLM-CompDroid: Repairing Configuration Compatibility Bugs in Android Apps with Pre-trained Large Language Models
  Zhijie Liu, Yutian Tang*, Meiyun Li, Xin Jin, Yunfei Long, Liang Feng Zhang, Xiapu Luo
  ACM Transactions on Software Engineering and Methodology (Major Revision) (2024). 2024

WORK EXPERIENCE

Tencent Keen Security Lab, Security Engineer Intern   *Xuhui, Shanghai*

Project: Hashing Programs for Binary Code Similarity Analysis   *August 2023 - Current*

- Worked on ***BinaryAI***, the binary file security analysis platform developed by Keen Security Lab, which is based on AI security for applications such as Binary Code Similarity Analysis (BCSA), Malware Analysis, and Software Composition Analysis (SCA);
- Expected to be appointed as the principal for BinaryAI underlying algorithms at 1th August 2024;
- Contributed to BinaryAI's downstream tasks, including BCSA, ***Malware Analysis***, and Threat Intelligence;
- Designed and deployed new algorithms for ***BCSA***, which focuses on large-scale scenarios on the program level.

ShanghaiTech University, CATLab, Member   *Pudong, Shanghai*

Project: *Malicious Component Detection for Android Apps*   *January 2022 - August 2023*

- Summarized the shortcomings of existing Android malware detection systems;
- Designed a new approach based on deep learning and genetic algorithm for detecting Android malicious components adaptively;
- Improved the performance and robustness of Android malware detection by up to 10% and 20%, respectively;
- Supported fine-granularity Android malicious component detection.

Teaching Experience

ShanghaiTech University, Teaching Assistant *Pudong, Shanghai*
Course: SI200 Academic Paper Writing (in English and Chinese) *2023 - 2024 (Fall)*

Skills

Programming   C/C++, Java, Python, x86 Assembly, SQL, Dafny, Promela, Shell, etc.
MLOps   Pytorch, WandB, Milvus, Faiss, LLM, cuML, etc.
DevOps   Docker, Git, Redis, SpringBoot, gRPC, etc.
SE & Security   IDA Pro, Ghidra, angr, Soot, FlowDroid, Tai-e, Z3, MinHook, Neo4j, CodeQL, SonarQube, Spin, etc.
Miscellaneous   Windows, Linux, Android, LaTeX, Microsoft Office, etc.

Services

2024	**Program Committee**, International Conference on Software Engineering & Knowledge Engineering (SEKE)	*ITALY*
2023	**Subreviewer**, Asia-Pacific Software Engineering Conference (APSEC)	*KOREA*
2023	**Program Committee**, International Conference on Software Engineering & Knowledge Engineering (SEKE)	*USA*

Awards

2023	**Outstanding Student**, Graduate Scholarships, ShanghaiTech University	*China*
2022	**Outstanding Thesis Award**, Undergraduate Research Scholars, Chang'an University	*China*
2022	**Outstanding Graduate Award**, Undergraduate Scholarships, Chang'an University	*China*
2022	**The Second Class Prize Winner**, ASC22 Student Supercomputer Challenge	*China*
2021	**National Scholarship**, Undergraduate Scholarships, Chang'an University	*China*
2021	**Meritorious Winner**, 2021 Interdisciplinary Contest in Modeling	*USA*
2020	**National Scholarship**, Undergraduate Scholarships, Chang'an University	*China*
2019	**Second Prize of Zhaoshang-Road Scholarship**, Undergraduate Scholarships, Chang'an University	*China*

News Interview/Media Coverage

2024	**News Interview**, IEEE Spectrum "How Good Is ChatGPT at Coding, Really? Study finds that while AI can be great, it also struggles due to training limitations"	*IEEE Spectrum*

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