Shenghan (Eric) ZHENG

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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY, Berkeley, CA   Aug. 2021 – Jun. 2022
Exchange student, College Of Engineering
- GPA: 3.83/4.0
- Core Course: Algorithms, Artificial Intelligence, Computer Security, Optimization, Software Engineering

SHANGHAITECH UNIVERSITY, Shanghai, China   Sep. 2019 – Jun. 2023
Bachelor of Science, Computer Science and Technology
- GPA: (Last 3 semesters): 3.75/4.0 | GPA (Major): 3.6/4.0 | GPA 3.54/4.0

UNIVERSITY OF CALIFORNIA, IRVINE, Irvine, CA   Jun. 2022 – Sep. 2022
School of Engineering, UCInspire (International Student Program Immersive Research Experience)
- GPA 4.0/4.0
- 10 week faculty-guided individual study course (details below in *Experiences* and *Projects* section)

UNIVERSITY OF CALIFORNIA, RIVERSIDE, Riverside, CA   Sep. 2023 – Jul. 2025(Expected)
Master of Science, Computer Science
- GPA 3.85/4.0
- Core Course: Advanced Operating System, Advanced Computer Architecture, Compiler, Software Testing, Software Security, Deep Learning

RESEARCH INTEREST

Cybersecurity, LLM security and MLsys. Data-efficient AI. Software testing and verification. Adversarial attack. LLM-oriented bug finding and patch generation.

PUBLICATION

Man, K., Wang, Z., Yu, H., **Zheng, S.**, Zhou, X., Cao, Y, Qian, Z. *SCAD: Towards a Universal and Automated Network Side-Channel Vulnerability Detection.* IEEE S&P 25.

PAPERS UNDER REVIEW

PROJECTS

UC RIVERSIDE, Riverside, CA   Apr. 2024 – Now
Graduate Student Researcher
Topic: Testing Harness Generation of Lib Code with LLM
Many simple bugs in lib function are not detected because they are difficult to be covered by unit test and fuzzing test. One solution is to provide testing harness for the function. Our project aims to use LLM to generate reliable and usable testing harness for lib code for bug detection.
- **Skills involved**: LLM, prompt engineering, static analysis, environment setup.

UC RIVERSIDE, Riverside, CA   Jan. 2024 – Now
Graduate Student Researcher | PI: Prof. Zhiyun Qian & Prof. Srikanth V. Krishnamurthy
Topic: GraphMerge: Enhancing Performance through GNN-Based Symbolic Joint Point Merging
Symbolic execution is an approach to analyze the program without concrete inputs. However, the number of states could be exponential due to the state fork in each branch. State merge is a technique that can merge multiple states into one to reduce the number of states. My project aims to identify whether the symbolic engine should merge states in a merge point to improve the performance of symbolic execution. We developed the GNN model to determine the merge

decision for merge points. We also developed multiple versions of KLEE(symbolic execution engine) to interact with our model and collect data.

- **Skills involved**: KLEE, symbolic execution, Pytorch, sklearn, network environment setting, graph neural networks, C++, scripting.

UC Riverside, Riverside, CA   Mar. 2024 – Now

Student Researcher

Topic: Advancing Model Interpretability with Guided Integrated Gradients

Integrated Gradients (IG) is a widely used feature attribution technique for deep neural networks, offering several advantageous properties. However, spurious or noisy pixel attributions are produced in regions irrelevant to the predicted class when apply IG to visual models. This project aims to solve this problem and is built upon Adaptive Path Methods (APMs). We adjust IG by topological order of image. Our Topology-Aware Guided IG, ensures that the interpolation between the input graph and its counterfactual is performed in a manner that respects the graph's inherent structure, leading to more meaningful and dependency-aware attributions.

- **Skills involved**: Pytorch.

UC Irvine, Irvine, CA   Jun. 2022 – Sept. 2023

Student Researcher, DSP (Data-driven Security and Privacy) Lab, UCInspire | PI: Prof. Zhou LI
Topic: packet-logic-based DOS attack in Windows 10
This project aims to conduct a DOS attack that can work on most of the Windows releases. By reverse engineering, we found out that the basic logic and structures of packet handling have remained unchanged for many years. The process of looking up and editing packets' metadata could potentially be leveraged to perform DOS with the offline effort to crack critical values in the structures related to packet storage.

- **Skills involved**: WinDBG, QEMU, Network environment setting, network measurement, IDA Pro, Ghidra, scripting, C/C++, Socket programming.

SERVICES

Artifact Evaluation Committee
- NDSS: 2024
- EuroSys: 2025

Registered Reviewers
- EAI SecureComm: 2024
- IEEE T-IFS: 2024
- Computer Networks: 2025

External Reviewers
- CCS: 2024
- NDSS: 2025

TEACHING

CS181: **Artificial Intelligence**, ShanghaiTech, Course Prof. Kewei Tu   Sep. 2022 – Mar. 2023
- Leading discussions, answering Piazza questions, holding office hours, preparing and reviewing homework and exam projects for 120 students.

EXPERIENCES

Shanghai Center of brain science and brain-inspired technology, Shanghai, China

Student Developer, Cognitive Intelligence Research Group | Prof. Yi ZHOU   Nov. 2020 – Aug. 2021
- Develop tools based on knowledge engineering. Focus on knowledge graph building, label recommendation, and model tuning.

UC Irvine, Irvine, CA

Student Researcher, DSP (Data-driven Security and Privacy) Lab | PI: Prof. Zhou LI   Jun. 2022 – Sep. 2022
- Selected by faculty advisor to continue research project into Fall season after end of research internship.

- Work on DNS protocol-related problems in Linux and Windows. Learn to build up DNS resolvers and servers.

UC RIVERSIDE, Riverside, CA   Aug. 2023 – Sept. 2024

Graduate Student Researcher
- Work on the intersection between machine learning and symbolic execution to enhance the performance(bug detection and execution speed) of symbolic engine.

AWARDS AND HONORS

- 2nd prize in Mathematics Olympiad, Zhejiang Province(Aug. 2017)
- 2nd prize in Mathematics Olympiad, Zhejiang Province(Aug. 2018)
- Contribution to *The Singing Flow* research project at University of Oxford and Goldsmiths, University of London (Sep. 2022)
- Outstanding Undergraduate, ShanghaiTech University(Nov. 2022)
- Distinguished Dean's Award, UC Riverside(Sep. 2023)
- 1st place in Butterfly Open Match, Los Angeles Table Tennis Association(Jan. 2024)
- 1st place in Butterfly Open Match, Los Angeles Table Tennis Association(Mar. 2024)
- 1st place in Butterfly Open Match, Los Angeles Table Tennis Association(July. 2024)

TECHNICAL STRENGTHS

- **English Fluency**: Chinese (Native), English (Fluent), TOEFL: 107 [R28/L29/S24/W26], GRE: [V154/Q168/AWA3.5]
- **Computer Skills**: python, assembly code, docker, scapy, KLEE, pytorch, C/C++, virtual machines, MATLAB, IDA, WinDBG, LLM, LLVM, LATEX, gcc, gdb, AFL, gcov
- **Math**: Linear Algebra, Mathematical Analysis, Partial Differential Equation, Abstract Algebra, Probability, Calculus

EXTRACURRICULAR ACTIVITIES

- **Activities**: Math Olympiads, Table tennis pro, Street dance, Guitar and flute player, Bodybuilder
- **Volunteer**: Berkeley Project Day, Social Practice Project, Industry Practice Project