Yuan Gao

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EDUCATION

University of Wisconsin - Madison, Madison, USA — Sep 2023 — Present
Bachelor of Science in Computer Sciences — Cumulative GPA: 4.00/4.00

Teaching Assistant: CSLC CS Tutor

Coursework: Operating System, High-Performance Computing, OOP and Data Structure (Java and Python), System Programming (C), Artificial Intelligence

Awards: Dean's List National Cyber League Fall 2022 Team Game Top 4

Beijing Jiaotong University, Beijing, China — Sep 2021 — July 2023
Bachelor of Science in Management Information System — Cumulative GPA: 3.72/4.00

Courseworks: Calculus, Linear Algebra, C Programming, Data Analysis

Awards: Beijing Jiaotong University Academic Scholarship

SKILLS

Programming Languages: (Proficient) Python, Java, C/C++; (Intermediate) JavaScript, HTML/CSS;
Frameworks: OpenMP, Node.js, Django, React, JUnit, JavaFX, Pytorch, Pandas, NumPy
Developer Tools: Git, Docker, AWS, MobaXTerm, WSL
Operating Systems & Tools: Linux, Windows, Hashcat, Wireshark, IDA Pro, Ghidra

EXPERIENCE

University of Utah *Software Security Group* — Salt Lake City, USA *Research Assistant* — Feb 2024 — Present

Advised by Professor Jun Xu

Research Area: Focused on System and Software Security, specializing in Reverse Engineering, Fuzzing, Program Analysis, and enhancing ML privacy to address software vulnerabilities.

- **Project:** Validating Correctness of Decompilation with Wild Binaries
- **Skills:** Reverse Engineering, Fuzzing Test, Program Analysis

PROJECTS

FUSE-based Wisc Filesystem Madison, USA — April 2024

- Developed a block-based filesystem in C using FUSE, implementing a traditional filesystem structure with a superblock, inode and data block bitmaps, and inodes and data blocks.
- Implemented core operations: create, read, write, and manage directories, ensuring efficient data handling and integrity.
- Utilized `mmap` for efficient disk image manipulation, allowing seamless memory mapping and file operations.
- Designed and implemented methods including `wfs_getattr`, `wfs_mknod`, `wfs_mkdir`, `wfs_unlink`, `wfs_rmdir`, `wfs_read`, `wfs_write`, and `wfs_readdir` to handle various filesystem operations.
- Handled complex challenges like maintaining consistency of inodes and data blocks, ensuring efficient space allocation, and managing file and directory metadata.

Dynamic Resource Optimization for Deep Learning Systems — In Progress

- Developing and optimizing DL model variants using **PyTorch** and **Torch-Pruning** to effectively prune **ResNet** and **VGG** architectures, aimed at reducing computational overhead and enhancing model efficiency.
- Implementing a reinforcement learning-based task scheduler to dynamically prioritize tasks, improving resource allocation and minimizing deadline misses in a real-time execution environment.
- Utilizing multi-objective evolutionary algorithms (MOEA) to optimize model scaling and execution strategies, balancing between real-time constraints and model accuracy.
- Contributing to the continuous evaluation of model performance and scheduling effectiveness, refining strategies to maximize throughput under varying system conditions.
- Managing and storing multiple scaled model variants in a structured directory system to facilitate efficient testing and deployment.