Jayden Cheung

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EDUCATION

Purdue University — West Lafayette, IN
Master of Science in Computer Science — *Aug. 2024 – May 2026*
- Completed: Algorithm Design
- Planned: Compiling Systems, Information Security, Operating Systems, Cloud Computing, Data Mining, Deep Learning, Software Security

Purdue University — West Lafayette, IN
Bachelor of Science in Computer Science — *Aug. 2020 – May 2025*
- Completed: Calculus III, O-O Programming, Programming in C, Linear Algebra, Discrete Math, Data Structures & Algorithms, Computer Architecture, Software Engineering I, Systems Programming, Software Engineering Senior Project, Software Testing

EXPERIENCE

Computer Engineering Intern — May 2023 – Aug 2023, May 2024 – Aug 2024
EndoSec — *Remote*

Summer 2024
- Implemented 2-share masking for SHA-3 cryptographic hash algorithm in VHDL, enhancing side-channel leakage resilience using a threshold implementation scheme.
- Designed and integrated a secure padding mechanism and input system for the SHA-3 VHDL implementation, successfully passing NIST test vectors.
- Utilized GTKWave for VHDL debugging, gaining proficiency in hardware simulation and analysis.

Summer 2023
- Contributed to VHDL implementation of the Mersenne Twister algorithm, focusing on system robustness and integration with the NIST statistical test suite.
- Developed an onboarding repository, creating standardized Git workflows and configuring Neovim, facilitating efficient onboarding processes.
- Implemented a Matrix Synapse homeserver using Docker and PostgreSQL, significantly improving internal communication and collaboration.

Data Science Intern — August 2022 – May 2023
Merck — *West Lafayette, IN*
- Developed a document parsing application with a ReactJS/NodeJS front-end and FastAPI/Uvicorn back-end, enhancing data processing capabilities.
- Integrated OpenAI GPT for document value extraction, optimizing data analysis and deployed the system on AWS EC2.
- Collaborated on machine learning research, utilizing Keras, TensorFlow, and PyTorch to contribute to model development and optimization.

PROJECTS

CodeSync | *Monaco Editor, Yjs, Firebase, Next.js, Electron, WebSockets* — January 2024 – May 2024
- Led the integration of real-time collaborative coding using Yjs with the Monaco Editor, enabling multiple users to edit code and view each other's cursor in real-time.
- Implemented file sharing and collaboration rooms, allowing users to create/join rooms and share files for real-time collaborative sessions.
- Utilized Electron and Next.js to build a desktop IDE with local file management, enabling users to edit, save, and download code projects.
- Developed a text chat feature within the platform using WebSockets for real-time messaging between collaborators.

Wave | *Electron, JavaScript, MediaPipe, MongoDB, Python, Flask* — Boilermake XI Hackathon, January 2024
- Developed a hands-free computer control system using machine learning for gesture detection and interpretation.
- Utilized Electron/Next.js for the frontend, Python Flask for the backend, and MongoDB for the database.
- Enabled users to perform actions like volume control through gesture sequences.
- Collaborated with a team of 4 at Boilermake XI hackathon, building the project in 36 hours.

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, VHDL, Bash, SQL, Java, Lua, x86-64 Assembly
Frameworks: React, Next.js, Node.js, Flask, FastAPI, Electron
Developer Tools: Git, Docker, GTKWave, Google Cloud Platform, AWS, PostgreSQL, MongoDB, SQLite
Libraries: PyTorch, TensorFlow, Keras, MediaPipe, OpenCV, Yjs, Boto3