Yeji Lee

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Portfolio (website): https://yejilee2305.github.io/

EDUCATION

Michigan State University **East Lansing, Michigan**
Bachelor of Science in Computer Science, Minor in Business *Expected Dec 2025*

- Dean's List
- Relevant coursework: Introduction to Programming I & II (python, C++), Computer Organization & Architecture, Algorithms & Data Structures, Software Design, Algorithm Engineering, Artificial Intelligence, Database Systems, Mobile App Development, Big Data Analysis

EXPERIENCE

Vectra AI (via Michigan State University Capstone) **East Lansing, Michigan**
Software Engineer *August 2025 – Present*

- Built a complete orchestration pipeline using FastAPI microservices for RFC discovery, YAML extraction, PCAP generation, and multi-stage validation tasks, that decreased the time for manual assembly of all these steps by 45%.
- Developed a dashboard using React for visualizing metrics in real time with FastAPI endpoints serving live data from SQLite and file-based job tasking.
- Engineered an LLM-powered semantic validation process powered by LLM which compares Vectra AI metadata with user intent, generating 5–8 context-aware validation checks per PCAP with configurable caching for deterministic results.
- Created a web crawler that scraped and normalized over 35 RFCs from multiple mirrors providing automated protocol discovery and dataset creation, including freshness checks as part of the process.
- Created multi-packet flow and TCP variant generators capable of generating between 3 and 12 packets exchanged back and forth over an IP connection, which were validated against Wireshark dissectors to ensure conformity to the respective protocols.

Formula SAE, Michigan State University **East Lansing, Michigan**
Mechanical / Software Design Member *August 2022 - May 2023*

- Designed and built a custom tire rack for the race car that improved pit garage space by 20% for pit stops.
- Collaborated with 10+ engineers to develop CAD models, manufacture parts, and assemble everything together.
- Implemented a simulation and validation process to check for proper weight distribution and stability of design for durability.

Panera Bread **East Lansing, Michigan**
Team Lead *May 2024 – November 2025*

- Successfully always managed a team of 6-8 employees while maintaining over 100 transactions per hour and 98% order accuracy.
- Established a rotation system for tasks that decreased the amount of time customers waited in line by 2 minutes and increased efficiency in workflow by 15%.
- Accrued an impressive record of zero incidents in terms of safety situations throughout all of the shifts I supervised.

PROJECTS

Packet Forge: AI Network Protocol Engine

- Developed a Natural Language Intent-Based Packet Capture Generating System (PCAP) that translates natural language requirements into RFC compatible packet flow representations and generated 50+ verified test PCAPs.
- Developed a Command Line Interface (CLI) application which represented 3 RFC mirror representations and normalized 80+ protocol alias/representations and mapped/represented 35+ Network Protocols (RFC) to their respective RFC documents.
- Developed an Automated Multi-Packet Flow Generator to produce 5–12 Stateful Packet Flows for each Session and to validate packet flow contents using Wireshark's Dissector tools.
- Developed 3 Generators of TCP Packet Transport Variant based on generating hundreds of test variants to test the Robustness of Protocol Implementation.

Automated Meeting Notes System

- Built AI-powered app processing 60+ minute audio/video files, reducing manual note-taking time by 90%.
- Integrated OpenAI Whisper (95% transcription accuracy) and GPT-4 to extract 10-15 action items per meeting with automated priority tagging.
- Developed FastAPI backend with PostgreSQL database handling 500+ meeting records and real-time Slack/email notifications to 20+ users.

Aquarium Simulation

- Developed an Interactive Aquarium Simulator that Represents Inheritance and Polymorphism in Object-Oriented Programming Design.
- Developed 5 fish behavioral motions (Swim, Chase, Eat. Flee) with the capability of being added or removed at Run-Time, representing 15+ Dynamic Objects and User Interaction simulation.
- Optimized Rendering Loop to improve the Frame Rate of the Simulation by approximately 20%. Following Usability Testing resulted in 90% of Test Subject Participants showing improvement with their Understanding of Object-Oriented Programming.

SKILLS

Programming: Python, C++, Java, SQL, JSON, JavaScript, TypeScript
Frameworks / Tools: React, Node.js, FastAPI, Uvicorn, Docker, Kubernetes, GitHub, GitLab, VS Code, CLion, PuTTY, Postman
Cloud / DevOps: AWS, Linux, Bash scripting, CI/CD pipelines
Data / AI: TensorFlow, scikit-learn, Pandas, NumPy, Power BI, Excel
Networking / Security: Wireshark, PCAP/PCAPNG analysis, ABNF parsing, Network simulation, CompTIA Security+
Concept / Practices: API design/testing, OOP (Inheritance, Polymorphism), Agile, Scrum, Version Control (Git)