Rachel Li

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Education

Northwestern University **Expected June 2027**

Bachelor/Master of Science in Computer Engineering *Evanston, IL*

Major GPA: 3.91/4.00 | Murphy Scholar | Dean's List High Honors

Relevant Coursework: Computer Architecture, Operating Systems, Computer Networking, Scalable Software Architectures (AWS), Data Structures and Algorithms, Machine Learning, Computer Networking, C/C++ OOP

Technical Experience

Caterpillar Inc. **June 2025 – Sep. 2025**

Electrification Systems Intern *Peoria, IL*

- Spearheaded a power request simulator with a complete GUI allowing users to generate variable power requests in order to monitor/optimize dispenser responses, drastically streamlining the testing & verification process for MCS
- Designed extensive CAN architecture diagrams via Simulink to identify redundancies and streamline state flow
- Wrote CAPL & Python scripts to test/verify third-party systems, identify hardware issues, and enable automation

Institute of Electrical and Electronics Engineers (IEEE) **Jan. 2025 — May 2025**

Software Engineer (FormSync - IEEE Most Technical Project) *Evanston, IL*

- Designed motion comparison application for users to improve their physical movements by viewing 3D skeletal reconstructions against a reference video, providing scoring metrics for various joints and points of interest
- Implemented transformer-based architecture for 2D-to-3D lifting pose estimation from video frames in PyTorch
- Leveraged spatial-temporal attention along with frequency domain representations using DCT and low pass filters
- Created an evaluation criterion to assess accuracy between reference and input videos for form improvement

Northwestern ECE Department **Sep. 2023 – Present**

Laboratory Assistant *Evanston, IL*

- Designed a student toolkit check-in/out system utilizing PowerShell, decreasing processing times by 60%
- Devloped an application for students to easily upload Assembly files via serial communication for course project
- Maintained 300+ equipment kits to aid students in computer/electrical engineering courses per academic year

Projects

Type-Folio | *React, Tailwind CSS, JavaScript*

- Designed portfolio website within a keyboard typing test, with switch sounds and locally stored metrics

Super Mario Run | *ARMv7 Assembly*

- Developed an endless platform runner inspired by Super Mario Bros. that is fully run on an ARMv7 emulator
- Implemented custom sprites, a local high score & points system, and double buffering for improved user experience

Open Street Maps Navigation System | *C++, GoogleTest*

- Built a map navigator of Evanston; extracted definitions for landmarks; implemented support for map searching
- Integrated CTA bus API to provide real-time bus information for stops nearest to any given building or location
- Utilized GoogleTest framework to develop and execute unit tests, ensuring code reliability and functionality

Audio Spectrum Visualizer | *C++*

- Created analog band-pass filters to process microphone signals, interfaced with digital filtering on an ESP32
- Mapped signals onto a commercial 64x32 LED matrix, with visualizer animations developed for microcontroller

Leadership

Kappa Theta Pi Professional Fraternity **Apr. 2025 – Present**

Recruitment Chair & Capstone Advisor

- Coordinated rush process for 150+ potential new members, ensuring an efficient recruitment of a 20-person PC
- Advised new members on their 6-week capstone projects to build the most technically rewarding project

Skills and Interests

Languages: Python, C, C++, ARM, x86-64, Verilog, VHDL, CUDA, Java, HTML, CSS, JavaScript, PowerShell
Development Tools and Libraries: Git, AWS, Jira, NumPy, PyTorch, React, Tailwind CSS, GoogleTest, Solidworks
Interests: Rock Climbing, Tennis, Pickleball, Keyboard Building, Coffee Making, FPS Video Games