

Richard Xu

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EDUCATION

Western University

London, ON

Software Engineering — Bachelor of Engineering Science (BESc) GPA: 3.9

Sept. 2024 – Apr. 2028

EXPERIENCE

AI/ML Research Intern

May 2025 – Aug 2025

Western University

London, ON

- **Designed and trained** a reinforcement learning agent using **Stable-Baselines3 (PPO)** and **Gymnasium** to minimize Wi-Fi **latency, jitter, and packet loss** in multi-AP environments
- **Built a custom Gym-compatible environment** with reward shaping from real network measurements and QoS-aligned objectives
- **Developed a full-stack platform (Flask + React)** to run experiments, collect live Wi-Fi metrics, and evaluate AI-driven configuration decisions
- **Engineered interactive dashboards** with **Tailwind CSS** and **Recharts** to compare RL vs. baseline performance and trends over time
- **Integrated live AP scanning on macOS** for real-world evaluation despite OS channel-switching limits; **logged 50+** RL/baseline episodes per run for reproducible analysis

PROJECTS

AI/ML Wi-Fi Optimizer | *Python, Flask, React, Gymnasium, Stable-Baselines3*

May 2025 – Aug 2025

- **Trained a PPO agent** to optimize AP-side decisions using real latency, jitter, and packet loss as feedback; automated RL vs. baseline comparisons
- **Implemented a custom Gym environment** with reward shaping and episode logging for reproducible experiments
- **Built a full-stack app** to visualize metrics and agent decisions via **Recharts** and **Tailwind**; exposed REST endpoints for run/evaluate/summarize
- **Captured live AP scans on macOS** to ground evaluations in real network conditions; produced CSV logs for analysis

eBay Deal Finder | *Python, Flask, React, eBay API, PostgreSQL, Render*

July 2025 – Aug 2025

- **Built a full-stack web app** that lets users search for products and find real-time deals using the **eBay API**
- **Integrated** eBay production and sandbox APIs, handling **authentication, queries, and dynamic responses**
- **Implemented** product sorting by **price/rating** and stored search history using **PostgreSQL**
- **Deployed** the app using **Render** with a **Flask backend** and **React + Tailwind frontend**

ExpenseTracker | *Python, Django, Bootstrap, SQLite, JavaScript*

Dec 2024 – Jan 2025

- Created a personal finance tracker with **income/expense logging, CSV export**, and time-based filters
- Used **Django templates and Bootstrap** to build a responsive and modular UI
- **Added interactive filters** (e.g., last 6 months, 1 year) and dynamic charts using **Matplotlib**
- **Designed a clean layout** with sidebar navigation and support for theming

TECHNICAL SKILLS

Languages: Python, JavaScript, Java, C, SQL, HTML/CSS, Bash

Frameworks: React, Flask, Django, FastAPI, Gymnasium, Stable-Baselines3, Bootstrap, Tailwind CSS

Tools: Git, Docker, Postman, Render, GitHub Actions, VS Code, PyCharm, Google Colab

Libraries: pandas, NumPy, Matplotlib, Recharts, Chart.js, tqdm, rich

APIs/Tech: REST APIs, CoreWLAN (macOS), CSV logging/ETL

Concepts: Reinforcement Learning (PPO), vectorized envs, callbacks/monitoring, full-stack development, data visualization, deployment