Patrick Halim ⬈

pnhalim@umich.edu | 1-248-787-2108 | linkedIn | github | portfolio

EDUCATION

University of Michigan | B.S. COMPUTER SCIENCE   Ann Arbor, MI | May 2025

- **GPA**: 4.0/4.0
- **Coursework**: Data Structures and Algorithms, Web Systems, Database Management Systems, Machine Learning, Computer Organization, Foundations of Computer Science (Ongoing: *Software Engineering***, *Operating Systems***)
- **Instructional Aide** for EECS 498 (XR Development Capstone)

EXPERIENCE

BOSCH | SOFTWARE ENGINEER INTERN   Plymouth, MI | May - Aug 2022, May – Aug 2023

- Built a modular, high-performance **UDP socket** gateway in **C++** to achieve real-time autonomous parking visualizations, now used by Bosch in NA and Germany.
- Developed a streamlined **automation GUI** in **Python** to efficiently deliver SW to Bosch microcontrollers, resulting in 4x increased vehicle testing capacity.
- Investigated and tested 6 years' worth of SW binaries to uncover cybersecurity module incompatibilities that caused microcontroller flashing errors.

NASA, CLAWS-UM | SOFTWARE DEVELOPMENT LEAD   Ann Arbor, MI | Sept 2021 - Present

- President of a 60-member team selected by NASA to create 2 **augmented reality** astronaut assistance systems for the HoloLens 2 (video, video).
- Implemented features for pathfinding, mission task list, vitals tracking, emergency rescue, and astronaut messaging with **Unity Engine (C#)** and **Microsoft MRTK**.
- Pioneered a system-wide **state machine** utilizing **event-driven architecture** to enable context-aware voice command processing and smoother UI navigation.
- Established foundational SW to support 16 AR developers by creating a clear **back-end** schema with singleton design and establishing **CI/CD** pipeline with GitHub Actions.

PROJECTS

EXERCISE MOBILE APP ⬈   C#, UNITY ENGINE, AR FOUNDATION, GITHUB, BLENDER, SHOGUN

- A polished **Android/iOS** app utilizing **augmented reality** and **3D motion capture** to teach exercise form, featuring an attractive UI, exercise database, tutorial and info screens, and persistent user data storage.
- Created in a tight 4-week timeframe with a team of 5 developers and showcased at the XR at Michigan Summit.

LINKEDIN FOR FOODIES ⬈   REACTJS, REDUX, FIREBASE, JAVASCRIPT, HTML, TAILWIND CSS

- A stylish, mobile-responsive social media web app based on the LinkedIn UI built in 5 days, utilizing **Firebase Auth** for user authentication and **Cloud Firestore** for NoSQL database.

INSTAGRAM CLONE ⬈   PYTHON, FLASK, SQLITE, REACTJS, JAVASCRIPT, HTML, CSS

- A **full-stack** social media **web app** with a **ReactJS** frontend and **Flask** rest API to deliver a modern Instagram experience, featuring infinite scrolling, commenting, double-tap to like, account creation, and account editing.

SEARCH ENGINE   PYTHON, FLASK, REACTJS, JAVASCRIPT, HTML, CSS

- A search engine to rank Wikipedia articles, featuring a custom **MapReduce** server and pipeline, service-based architecture, **multi-threading** and concurrency handling, redundancy protocols, and **fault tolerance** mechanisms.

DOG BREED CLASSIFIER   PYTHON, PYTORCH, SCIKIT-LEARN, NUMPY, PANDAS

- A 3-layer convolutional neural network constructed with **PyTorch**, including freeze layers, data augmentation, and transfer learning to classify 6 dog breeds with 80% accuracy.

SKILLS

Skills: C, C++, C#, Python, Java, JS, R, HTML, CSS, React.js, Git, Linux, Docker, Unity, Unreal Engine, Rest API, SQL, Flask, AWS

Knowledge: Software Engineering, Object-Oriented Design, Project Management, UX, Agile, CI/CD, Git Workflow

Soft Skills: Self-Initiative, Leadership, Creativity, Curiosity, Desire to Learn

Awards: Eagle Scout, Cisco Design Competition - 1st Place, Southeast Asian Studies - Best Language Award