

PATRICK HUYNH

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Skills

- Programming** C/C++ (OpenCV, Eigen), Python (Pandas, NumPy), HTML/CSS, JavaScript (Node, React), MATLAB, R/R Studio
- Certifications** **Coursera:** Algorithms Specialization (Stanford), Algorithms (Princeton), Data Science (IBM), MATLAB (Vanderbilt)
- Miscellaneous** Linux, Git, Shell (Bash/Zsh)

Work Experience

Software Engineer

Vaughan, ON

Martinrea Alfield Industries

Jan 2023 - Present

- Integrating a modified version of **ORB-SLAM3** with **C++** on an autonomous intelligent vehicle (AIV) to eliminate the manual delivery system of goods and parts around the plant
- Collaborating with a team to implement the SLAM algorithm with **Intel RealSense Depth** cameras equipped with an **IMU** using the **Extended Kalman Filter**, so the AIV can support autonomous long distance navigation
- Developing in a **Linux** environment which will be deployed on **NVIDIA Jetsons** using **Eigen** for affine transformations and **OpenCV** to generate top-down maps for the AIV

Front-end Developer

Vaughan, ON

Martinrea Alfield Industries

May 2022 - Aug 2022

- Implemented a portable and scalable application in **HTML/CSS/JS/React** that unifies different parts of the plant by creating a digital representation of the factory that will be used by various stakeholders including managers, maintainers, integrators, and developers
- Integrated the **Django-based RESTful API** and designed an abstract state management structure using **Redux Toolkit** and **Axios** to manage device registration, map configuration, and user authentication
- Led the development of a maintainable interface for a self-driving autonomous intelligent vehicle (AIV) using advanced **JavaScript/React** design patterns (**HOC, Provider, Hooks**)

Full Stack Software Developer

Kitchener, ON

The Co-operators

Sep 2021 - Dec 2021

- Launched a Business Continuity Plan software using a **MERN** stack so clients can digitize **CRUD** operations of different plans including business model plans used by over **120** clients nation-wide
- Consolidated data from the frontend by centralizing the application state using **Redux** and storing it into the database with **MongoDB**
- Assisted in creating the front-end interface for an A.I. based chat bot using **React** and **JavaScript** frameworks that would autonomously provide customer service for clients and customers
- Collaborated in an **Agile workflow** using **Jira** for ticket management, **Bitbucket** for version control, and **Confluence**

Projects

Biquadris (Tetris)

C++ (OOP), Bash, X11

- Designed and implemented a 2-player Tetris-based game that supports local multiplayer functionality
- Built in **C++** using **OOP** concepts (**polymorphism, SRP**), memory management principles (**RAII**) and various design patterns (observer, template, factory)

Inventory Stock Bot

Python, BeautifulSoup, Twilio

- Developed a **Python** program to determine product availability used regularly by **4** clients to buy high-demand items during the pandemic
- Accessed, scraped, and parsed the HTML website using the **Requests** and **BeautifulSoup4** library to determine the desired products stock availability every 60 seconds
- Implemented an SMS notification system using the **Twilio API** to notify users when the product is in stock

Education

University of Waterloo

Waterloo, ON

Bachelors of Computer Science, Honours Co-op

Sept 2020 - Current

- Cumulative GPA: 3.9/4, President's Scholarship
- Courses:** Object-Oriented Software Development, Data Structures and Data Management, Algorithm Design and Data Abstraction