Tran Khoi Nguyen Pham

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Education

University of Manchester **Sep 2023 – August 2027**
BSc. (Hons) Computer Science *Manchester, United Kingdom*

- Relevant Coursework: Data Science, Operating System, Computer Engineering & Architecture, Discrete Mathematics.
- Activities: Student Representative, Google Developer Student Club, Hyperloop Manchester, Manchester Robotics Society, GreatUniHack 23', Hackchester - Cyber Security, Manchester Trading Society and MUDSS.

Experience

Hyperloop Manchester **Sep 2023 – Present**
Electronics and Software Engineer *Manchester, United Kingdom*

- Programmed and designed a multi-panel GUI using C++ and Qt Widgets to display real-time camera feeds, motor variables, GPS location data, 3D pod heat maps, and system logs.
- Established real-time communication between the micro-controllers and GUI to ensure seamless sensor updates.
- Leveraged HTML, CSS and JavaScript to enhance the front-end user experience and modernised the design architecture of HyperLoop's main website through front-end development.
- Summarised and presented send weekly reports and documentation of contributions to team members using LaTeXand Microsoft Office tools.

Manchester Robotics Society **Sep 2023 – Present**
Software and Electronics Engineer Member *Manchester, United Kingdom*

- Created an autonomous buggy equipped with an ultrasonic sensor and servo for obstacle detection and navigation.
- Programmed the buggy using C ++ to utilize ultrasonic feedback to manoeuvre via servo control for accurate path-finding and autonomous movement, demonstrating skills in electronics, prototyping and sensor integration.
- Collaborated with team members using version control systems such as Git to organize modifications and assign tasks.

Projects

Sea Sentry | *University of Edinburgh's Annual Hackathon Project, Tensor Flow, Geospatial data pipeline* **March 2024**

- Developed an AI/ML system that detects and predicts oil spills in real-time using a geospatial data pipeline.
- Created a mathematical model to predict short-term price fluctuations of crude oil using the Heston Model Simulation and the continuous Euler-Maruyama approximation.
- Overcame challenges in detecting oil spills using hyperspectral imagery by converting the image to 3 channels and applying transfer learning, achieving high accuracy of 85%.

EnViz - Physics Visualisation EdTech Tool | *React, Typescript, Plotly, Matplotlib* **February 2024**

- Competed in Marshall Wace's challenge for schools in a 24-hour Hackathon against 600 students at Imperial College.
- Collaborated to develop an easily accessible visualization tool using Plotly and React with Typescript, designed to assist teachers in explaining complex concepts and engaging students across diverse subjects.
- Facilitated to the creation of physics simulations, notably focusing on the Higgs Field theory, and integrated complex concepts including Quantum Field Theory and Lagrangian Mechanics.

VisuaLearn - Math Teaching Website | *HTML, CSS, JavaScript, Flask, SQLite3, Python, API* **October 2023**

- Lead a team of 5 students with agile systems planning to leveraged HTML, CSS and JavaScript while employing user-centred design principles to develop an intuitive and seamless user interface with activities in the app.
- Engineered a responsive and dynamic web application using Flask and Jinja templating engine, integrating a secure user authentication system with SHA-256 password hashing and SQLite3 database for efficient data management.
- Programmed Python scripts to scrape online educational resources and retrieve structured test questions/answers.

Automated Chess Board | *C++, Microcontroller, Arduino* **June 2023**

- Implemented Minimax and Alpha-Beta pruning algorithms to optimize decision-making in the chess bot, reducing computation time by 50%.
- Developed evaluation functions to assess chess board positions to checkmate to guide search toward optimal outcomes.
- Improved on the circuit design, code implementation and assembly of the chess board.

Technical Skills

Languages: Python, HTML/CSS, JavaScript, TypeScript, Verilog, Assembly, C, C++ , Java, PHP.
Technologies/Developer Tools: GitLab, GitHub, WordPress, LaTeX, Microsoft Office 365.
Database and Framework: MySQL, MongoDB, SQLite, React. **Operating Systems**: Linux (Advanced), Windows (Advanced).