Johnathan Ngo

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EDUCATION

The University of Queensland   Feb. 2024 - Present
Bachelor of Computer Science - Machine Learning   *Current GPA: 6.7/7.0*
Bachelor of Mathematics - Statistics

Queensland Academy for Science Mathematics and Technology   Jan. 2021 - Nov. 2023
International Baccalaureate Diploma   *IB: 40 | ATAR: 97.90*

Awards:
• Dean's Commendation for Academic Excellence '24 S1 • Australian Maths. Competition (AMC) '22 - Credit
• IB Australasia - Distinction • AMC '23 - Distinction

COURSEWORK

- Linear Algebra & Calculus
- Probability & Statistics
- Object-Oriented Programming
- Relational Databases
- Digital Logic & Systems
- Discrete Mathematics
- Systems Programming

PROJECTS

ORB & SuperPoint Depth Estimation | *Python, OpenCV, NumPy, pandas, Matplotlib*   Jan. - Aug. 2023
- Implemented ORB and SuperPoint algorithms to compute depth in a stereo camera system.
- Feature detection and matching using ORB and Brute Force based binary matchers.
- Performed rectification to align epipolar lines horizontally for image disparity calculation.
- Utilized the disparity map from semi-global block-matching cost functions to compute depth information.

SilverPlate | *Java, JavaFX, SQL, Git, Gradle*   Nov. 2022 - May 2023
- Developed a comprehensive takeaway management system to fulfill client needs.
- Implemented a GUI using JavaFX for various functionalities including sales, inventory, and reporting.
- Used a locally hosted database to store, manage, and retrieve sales, shifts, product, and inventory data.
- Enabled multi-language support using ResourceBundles to cater to a diverse user base.

Sokoban | *C, ATMega324A*   Sep. 2024 - Nov. 2024
- Developed a game of Sokoban on an ATMega324A microcontroller with an LED matrix display.
- Implemented joystick-based movement with player controls, collision and undo functionality.
- Developed a copy of the matrix display onto a terminal display with input facilitated by the keyboard.
- Integrated sound effects and a timer using pulse-width modulation techniques.

SimStreet | *TypeScript, Three.js, Next.JS, MongoDB, Python*   Dec. 2024 - Present
- Developing a web-app where custom road networks can be made alongside traffic simulations.
- Integrated functionality for editing OpenStreetMap instances with the help of OverpassAPI.
- Utilised Three.js LOD rendering for macroscopic and microscopic simulations.
- Implemented Python to create a visual traffic simulation engine to model vehicle movement and congestion.

SKILLS

Languages: Python, Java, C, Assembly, mySQL, R, Matlab

Tools: Git, Maven/Gradle, Jupyter Lab / Notebook, IntelliJ/PyCharm/IDEA

Frameworks: JUnit, Swing

Libraries: Matplotlib, NumPy, pandas, PyTorch, OpenCV, JavaFX