

Keshav Malhotra

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EDUCATION

University of Waterloo

BASc, Mechatronics Engineering (Co-op)

George A. Ward Entrance Scholarship | President's Scholarship of Distinction

2025 - Present

Waterloo, ON

SKILLS

Languages: C++, Python, Java, JavaScript, HTML/CSS

Full Stack: React, Node.js, WordPress

Tools: Git, VS Code, Visual Studio, PyCharm, IntelliJ, Clion, Eclipse, pandas, NumPy, Matplotlib, Langchain

Other: Linux, MS Office, G Suite, G License, Azure

EXPERIENCE

SickKids Hospital

Jul. 2024 – Oct. 2024

AI Research Intern

Toronto, ON

- Contributed to the development and successful launch of **SKAI (SickKids AI)**, the hospital's first **AI chatbot**.
- Influenced **LLM optimization** for clinical deployment by synthesizing qualitative data from **100+ patient interviews** into actionable technical recommendations for **model temperature** and sentiment alignment.
- Prototyped a mobile **autonomous robot** for emergency department logistics, integrating **sensor fusion** and **Arduino-based control systems** to navigate high-traffic clinical environments.

FRC - Team 6141

Jun. 2024 – Jun. 2025

School Captain

Toronto, ON

- Developed a **Java-based control system** for a **differential drive** robot using **WPILib**, implementing **Arcade Drive** logic for intuitive teleoperated handling via Xbox controller.
- Mentored **30+ students** in **Git version control**, **object-oriented programming**, and **sensor integration** (ultrasonic/IR), establishing a standardized documentation pipeline.

Ideal Computers Technology

Nov. 2023 – Dec. 2023

Technical Team Intern

Toronto, ON

- Delivered a company website redesign using **HTML**, **CSS**, and **JavaScript** to improve efficiency.
- Installed and configured operating systems (**Windows**, **MacOS**, **Linux**) for client systems.
- Diagnosed and fixed client system crashes and corrupted system files through **command-line-interfaces (CLI)**.

PROJECTS

NavBot - Autonomous Hospital Navigation Robot —View Demo— | C++, Git

Nov. 2025 – Dec. 2025

- Developed **autonomous navigation software** for a hospital delivery robot, handling real-time decision-making in dynamic indoor environments.
- Implemented **Dijkstra's algorithm** to calculate optimal global paths in a static map, integrated with real-time local path planning to navigate dynamic hospital environments.
- Experimentally tuned a custom **PI controller** for differential drive motors, achieving rotational accuracy within 1° error and linear precision within 5cm using **bumper and ultrasonic sensor feedback**.

Roboventure —View Demo— | Arduino, Git, Excel

Aug. 2024 – Sept. 2024

- Spearheaded technical workshops for **50+ students**, delivering hands-on instruction in **Arduino firmware development**, **circuit prototyping**, and **electrical safety practices**.
- Scaled organization participation by **300%** within one month by architecting a targeted outreach strategy and executing high-engagement robotics demonstrations.
- Secured \$1,500 in external venture funding from Promise1000 Canada; managed the full procurement lifecycle and budget allocation for hardware components and event infrastructure.

AI Heart Disease Prediction —View Demo— | Python, NumPy, Matplotlib, Kaggle, Git

Oct. 2023 – Nov. 2023

- Programmed a **Logistic Regression classifier** from scratch using **NumPy**, implementing **gradient descent** and **sigmoid activation** functions to achieve **92% predictive accuracy** on heart disease datasets.
- Optimized computational throughput by **vectorizing** training logic with NumPy matrix operations, reducing training latency and enabling **real-time visualization** of cost function convergence.