

MANAN SAINI

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EDUCATION

Queen's University

Bachelor of Applied Science

Mechatronics & Robotics Engineering

Kingston, Ontario

Class of 2027

- **Relevant Coursework:** Data Structures & Algorithms, Digital Systems (VHDL/FPGA), Automatic Controls

EMPLOYMENT EXPERIENCE

Spring Valley Corp

Project Management Intern

Hamilton, ON

Summer 2024

- Developed a production scheduling calculator in **Python**, integrating failure rates, mold availability, and future production projections to streamline project timelines
- Led as Project Manager for \$152M development in Manhattan, NYC, achieving a 500% boost in production and bringing rejection rates from 45% to 13%.
- Designed **CAD** drawings in **SolidWorks** to optimize truck layouts for transporting concrete panels, maximizing load efficiency.
- Contributed to the design of a **C++** program for automating and generating financial statements.

PROJECTS

Mobile Robot Delivery System for Quarantine Zones

- Developed an autonomous robot using Arduino IDE and **ROS 2**, applying embedded systems concepts to real-time motion.
- Programmed sensors, actuators, and navigation system to ensure precise and efficient delivery paths.
- Implemented self-sanitation feature using a servo and a camera system for virtual doctor consultations to minimize contamination risk.

Automated Fluid Dispenser

- Designed a functional gearbox in **SolidWorks** and assembled the prototype for testing.
- Programmed an Arduino board using **C** to automate fluid dispensing and a turntable system, enhancing precision and efficiency.
- Enhanced precision by integrating electrical hardware and control logic.

Autonomous Minibot Payloader (Path Following, Pick-up, & Drop-off)

- Automated navigational paths and obstacle detection using an IR sensor integrated with an ItsyBitsy microcontroller (C programming, low-level debugging).
- Designed a bucket system in **SolidWorks** to transport objects efficiently.
- Developed line-following and object pick-up/drop-off programming for seamless task automation.

Mobile Productivity App - Kaizen

- Built a productivity app in **React.js** and **Expo** to track weekly goals with custom frequency settings.
- Implemented a gamified point and ranking system to drive goal completion and user engagement.
- Preparing for **iOS** App Store release with full cross-platform support and optimized mobile UI.

EXTRACURRICULAR ACTIVITIES

Queen's Aerospace Design Team

Navigation Member (Software)

Kingston, ON

2024 – Present

- Programmed drone navigation software to autonomously transport and deploy a water reservoir for wildfire treatment using **Linux**, **ROS 2**, and **Gazebo** simulation system.
- Developed a system integrating a water sensor and servo motor with Arduino, creating a **Python** script to process sensor data and execute servo movement commands.
- Designed and implemented a function to navigate a drone to specific GPS coordinates, ensuring precise and reliable positioning using **Python**.

Queens Racing Formula SAE Team

Drive-Train Member

Kingston, ON

2023 – 2024

- Researched and optimized drivetrain components, achieving a 10% improvement in the efficiency of power transmission.
- Designed a chainguard using **SolidWorks**, considering cost, durability, and weight.

ADDITIONAL INFORMATION

- **Programming Languages:** Python, C/C++, HTML, CSS, MATLAB, VHDL, Assembly, React.js, Java, SQL
- **CAD:** SolidWorks, AutoCAD, Autodesk, Engineering Drawings, CAD Drafting.
- **Tools:** Gazebo, PX4, ROS 2, Git, Linux development environments, Flask, Intel Quartus, LTspice, Excel, Unit Testing, Docker, Ubuntu
- **Technical Hands-On Skills:** Soldering, Basic Automotive Repair.