Manjot Sodhi

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Education

McMaster University September 2021 - April 2026

Bachelor of Computer Engineering CO-OP *Hamilton, ON*

* Relevant Courses: Computer Architecture, High-Performance Programming,Principles of Programming (C/C++), Embedded Systems, Software Development, Algorithm Design & Analysis, Digital Systems Design, Logic Design.

Experience

Software Developer September 2025 - Present

RoboSub (Robotic Submarine Club) *Hamilton, Ontario*

* Developing **real-time embedded software pipelines** to integrate sensors, actuators, and processors; targeting a 30% improvement in latency for closed-loop control in underwater robotics.
* Implementing an object recognition system using **Python, OpenCV, and TensorFlow**, with the goal of increasing underwater object detection accuracy and enabling safer autonomous navigation.

Data Analyst (Systems & Automation) January 2025 - September 2025

Strive Capital Corporation *Toronto, Ontario*

* Engineered automated **data pipelines** in **SQL** and **Python** to process **1M+ records** across production and test environments, improving accuracy and reducing manual workload.
* Optimized **database queries** and report generation, achieving faster execution times and more efficient **system performance**.
* Built interactive **SSRS and PowerBi dashboards** with drill-down and parameterized filtering, enabling **real-time monitoring** of key system metrics.

Electrical Designer (System Integration) September 2024 - December 2024

Plans Group *Hamilton, Ontario*

* Applied **system-level electrical design principles** for large-scale infrastructure, ensuring accurate placement of 5,000+ components and compliance with industry standards.
* Detected and corrected electrical layout conflicts (e.g., conduit and junction box clashes) by performing detailed inspections in Revit, ensuring compliance with industry standards and accurate system integration.
* Optimized workflows using Revit and ALICE tools to improve efficiency in design documentation and system integration.

Projects

Hardware Implementation of an Image Decompressor

* Built a **Verilog**-based image decompression circuit on an **Altera DE2 FPGA**, implementing YUV-to-RGB conversion, downsampling, DCT, and quantization.
* Displayed decompressed .mic12 images via **VGA interface**, gaining hands-on experience with **digital signal processing (DSP)** and hardware-accelerated image pipelines.

3D LiDAR Scanner

* Developed a **LiDAR sensor system** with TI MSP-EXP432E401Y microcontroller, integrating ToF sensors via **I2C/UART** for 3D environmental mapping.
* Processed and visualized sensor data with **Python (Pandas, Anaconda)**, improving accuracy and functionality of the scanning pipeline.

Software Defined Radio

* Created a real-time **SDR system** for FM broadcast reception using **Raspberry Pi 4** and RF dongle (RTL2832U).
* Implemented **low-pass filtering and decimation** for mono channel extraction, achieving a 48 kSamples/sec output in 16-bit format.

Pacemaker Design and Implementation

* Built a device to monitor and regulate heart rate, implementing programmable pacing modes in **Simulink Stateflow** to ensure safe and accurate operation.
* Designed a **Python GUI** for the Device Control Module (DCM), allowing seamless mode selection and parameter adjustments.

Technical Skills

Languages: Java, Python, C/C++, SQL, R, MATLAB, Verilog HDL

Software: Pspice, LTspice, Keil, uVision5, VS Code, Quartus II, AutoCAD, Revit, Tableau

Hardware: PLCs/Microcontrollers/Microprocessors, AD2 Board, Raspberry Pi, Arduino, 3D Printing

Other: Data Analytics, Machine Learning, Research, Database Management, Linux