Jaavin **Mohanakumar**

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Skills

Proficient C, C++, Verilog, ARM-Assembly, SPI, I2C, UART, FPGA, Quartus, JavaScript, Python, Java, C#, .NET, React
Familiar Rust, TTL Logic, SerDes, Vivado, Lattice, MATLAB, Simulink, Azure, Linux, SQL, OpenCV, Git, PCIe, Modelsim

Experience

Software Developer Intern | **IPEX Management Inc.** | **Oakville, ON** **May 2024—August 2024**
- Developed a real-time factory alert system in **C#** using **.NET**, enabling audible warnings for critical machine failures, reducing incident response time by **30%** and minimizing production line downtime.
- Deployed a network configuration server for IPEX's corporate office, supporting **200+** users by automating **IP allocation**.
- Enhanced and **maintained** legacy systems from my first term, optimizing performance in the file transfer service and reducing error rates in the API Gateway.

Software Developer Intern | **IPEX Management Inc.** | **Oakville, ON** **May 2023—August 2023**
- Implemented file transfer service in **C#** using **.NET** for business-critical process reducing downtime from 14% to 2%.
- Reduced missed promises on API Gateway improving accuracy of item-vendor mapping by 183 basis points on **ASP.NET**.
- Planned migration of a real-time application from **Microsoft SQL** server to **MongoDB** for key business service.

Software Development Co-Lead | **FIRST Robotics Team 1325** | **Mississauga, ON** **September 2021—June 2022**
- Led the design, implementation, and testing of software systems in **Java** for a 120lb competitive robot.
- Innovated in autonomous programming using **PID controllers**, **control systems**, and **computer vision**.
- In this community robotics team previously sponsored by NASA, the robot has won many competitions and was awarded the Excellence in Engineering Award at the FIRST Robotics World Championship in Houston.

Projects

FPGA Pong Game | **Verilog, Lattice ICE40**
- Designed and implemented Pong game on Lattice FPGA using **Verilog** and **ModelSim** for UART-based video display system.

8-bit Breadboard Computer | **TTL Logic, Computer Architecture**
- Designed and built an 8-bit CPU on breadboard using fundamental **TTL logic** chips, implementing registers, ALU, program counter and control logic from scratch.

LiDAR Mapping Scanner | **C, Python, ARM-Assembly**
- Built a Light Detection and Ranging (**LiDAR**) prototype to map environments using an **Arm** microcontroller,
- Used **I2C** for sensor communication and **UART** for serial communication with a real-time GUI with 3D visualization

MeGPT | **React, TypeScript, Next.js, Google Cloud** *megpt.xyz*
- MeGPT is a tool to create an AI clone of yourself, which reached 518 users and over 2.2K visitors in the first 24 hours of launch
- Featured on *McMaster University's News*, and admitted to $10K microgrant program from McMaster Engineering.
- Accepted to the *Innovation Factory* startup accelerator in Hamilton. Speak to my MeGPT here: *megpt.xyz/jaavin*

WIFOM? | **Python, OpenCV, Django** *youtube.com/watch?v=dVGlT4DPtZg*
- What's In Front of Me? (WIFOM?) is an AI smart glass that uses machine learning object detection with **TensorFlow** to relay the surroundings real-time to visually impaired users.

Leadership

Assistant Project Manager | **McMaster Rocketry Team** *macrocketry.ca*
- Coordinated controls sub-team of 15 members to drive successful rocket launch at Spaceport America in New Mexico.

Committee Member | **McMaster Engineering 1 Operating Committee** *eng.mcmaster.ca*
- Consulted to McMaster leadership about enhancing the Engineering 1 program, as a voice for over 1000 engineering students.

Education

B.Eng. in Computer Engineering (Co-op) | **McMaster University** | **Hamilton, ON** **September 2022—April 2027**
- **Awards**: Faculty of Engineering Award of Excellence Scholarship