Nivetha Sathish

nivetha.sathish@mail.utoronto.ca | 289-500-9977 | www.linkedin.com/in/nivetha-sathish | github.com/NivethaSathish

EDUCATION

University of Toronto, 4th-Year Student

BASc in Engineering Science + PEY Co-op, majoring in Machine Intelligence | 2020 - 2025

Relevant Courses:

Machine Learning and Neural Networks (**Python**), Operating Systems (**C**, **Linux**), Computer Systems (**Verilog**, **ARM Assembly**), Algorithms & Data Structures (**C**, **Python**), Ordinary Differential Equations (**MATLAB**), Electric Circuits (**LTspice**)

EXPERIENCE

Amazon Robotics, Software Development Engineer Co-op | MAY 2023 - PRESENT

- Conducted a Design of Experiments to brainstorm ideas for reducing DPMO produced at robotic workcell stations. Implemented ideas and metrics in **Kotlin** using a robotic software framework and evaluated them by running experiments in a lab setting and a 5-day experiment at an Amazon fulfillment centre with associates. Created experiment protocols and versions of station software (stored in **Docker** images) to be tested, and used statistical methods to analyze metrics and write a report. All associates preferred the experimental version which also resulted in improved DPMO.
- Investigated several bugs encountered at production robotic workcell stations by analyzing **CloudWatch** logs and implemented fixes by reproducing the bugs and correcting the workcell station behaviour tree.
- Created a **Python** script that queries **CloudWatch** logs, creates a CSV file of events, and downloads corresponding videos from **Amazon S3** into separate folders to automate the process of investigating defects.
- Developed a feature enabling users to utilize a handscanner for case scanning at a robotic workcell station. Leveraged **Kotlin** within a robotic software framework to architect and code the feature. Conducted thorough testing procedures to ensure functionality and reliability. The feature is used approximately 300 times per week by associates.

UofT Formula SAE Racing Team, Senior Member - Firmware | SEPTEMBER 2021 - APRIL 2023

- Developed supporting tools for **CAN bus** library: user-friendly command-line CSV to DBC and **C++** header file generation script which greatly streamlines integration process for hardware testing (**Python**).
- Developed firmware to run on a **Teensy** 4.1 for the 2023 rear controller. Handles car states such as precharge, drive, and shutdown; monitors electrical components (i.e. low-voltage battery cells); and **CAN bus** communication with Cascadia inverter, accumulator (battery) control module (ACM), front controller, and data logger. Wrote coolant loop code to map sensor readings to temperatures, pressures, and flow rates, and safety critical logic to detect unsafe conditions and respond accordingly. Gained familiarity with electrical systems of the car including the Orion battery management system and thermistor expansion module and Emrax motor. Minimized microcontroller initialization complexity by coding a pin driver hardware abstraction where all microcontroller pins are set up in one function call (**C++**).
- Coded wheel speed interrupt to calculate rpm & kph using pin change interrupt (PCINT) registers on the **Arduino** Micro which allowed a non-external interrupt pin to trigger an associated interrupt service routine (**C++**).

UofT Hatchery Startup Incubator, Founder | MAY 2022 - AUGUST 2022

- Led a team of 8 engineering students through applying to and participating in UofT's selective startup incubator. Presented pitches in meetings with investors, organized weekly meetings, individual check-ins, and managed team work. As a team, worked on an app to improve people's morning routines and relationships with their phones.

PROJECTS

Python - Gomoku: Gomuko game with AI which analyzes the board and decides on best move based on potential wins/losses
Java - Peer Tutoring Database GUI: database which allows people to sign up for tutoring, be a tutor, or view tutoring data
Java - Monopoly Game GUI: game that lets the user play Monopoly with up to 3 other players
C - Seam Carving: performs image resizing by finding the least important parts of an image using a dual-gradient energy function

VOLUNTEERING

Newmarket-Aurora Youth Council, Member | MP Tony Van Bynen's Constituency Office | OCTOBER 2020 - MAY 2021

- Presented to Minister Fortier about Budget 2021 discussing issues such as climate change and sustainability.

Tsao Lab, Summer Research Appointee | Princess Margaret Cancer Research Tower | JULY 2019 - AUGUST 2019

- Organized cancer research data and specimens (over 500 cases) for PDXFinder website database using **Excel**.