FEILAN JIANG

3A Mechatronics Engineering | Seeking 4-month placements

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EXPERIENCE

Localization and Mapping Developer

Avidbots

Jan. 2019 – Apr. 2019 | Kitchener, ON, Canada

- Designed a modified visual SLAM algorithm to localize the robot during cleaning by tracking strategically placed AprilTags visual markers. Currently being evaluated for use in cleaning plan start-pose correction and map symmetry-breaking.
- Developed an automatic LIDAR calibration system used to prepare dozens of upcoming floor-scrubbing robots for the company's clients. Runs as a C++ ROS node and uses PCL's ICP point-cloud alignment to correct the TF pose of each of the robot's LIDARs.

ADAS Software Developer

BlackBerry QNX

May 2018 – Aug. 2018 | Ottawa, ON, Canada

- Created a LIDAR 3D object detector library demo used to instruct developers, saving hours of learning time. Implemented using C++ and PCL, performs real-time filtering of ground points, and finds objects using Euclidean cluster extraction.
- Developed a critical LIDAR point-cloud feature widely requested by customers, eliminating dozens of lines of client-side code per API usage. Augments QNX's LIDAR interface by joining packets of sensor readings to create a 360° panoramic 3D view of the surroundings.

Power Management Developer

Ford Motor Company

Sep. 2017 – Dec. 2017 | Ottawa, ON, Canada

- Reduced software verification time by creating CTest unit tests and automating the generation of Gcovr reports, allowing one to determine code coverage within minutes.

Software Developer

Nanometrics Seismological

Jan. 2017 – Apr. 2017 | Ottawa, ON, Canada

- Developed a C-based tool to evaluate the remaining lifespan of SD cards from metrics such as read/write count. Uses ioctl system calls and device-specific bit fields to obtain and parse various SD cards' SMART data.

PROJECTS

Autonomous Mobile Robot

Developing a wheeled robot that is controlled using various hand gestures. Uses NVIDIA Jetson Nano for computation, with the ROS software stack and Gmapping SLAM algorithm for autonomous navigation. Hand gesture recognition is done using OpenCV and TensorFlow-based hand keypoint detection.

IoT Smart Blinds

Created a schedulable blinds controller accessible via any smartphone or computer. Commands and stats are relayed over MQTT to a Home Assistant-powered frontend.

SKILLS

ROS | PCL | OpenCV | TensorFlow & Keras | Node.js | Angular

Boost | NumPy | matplotlib

Git | SVN | GDB | Valgrind | Ubuntu Linux | QNX Neutrino | Gazebo

SOLIDWORKS | AutoCAD | 3D Printing | Soldering | Machining

LANGUAGES

C++	~4 Years
Python	~2.5 Years
C	~2 Years
Java	~1.5 Years

EDUCATION

BASc Mechatronics Eng.

University of Waterloo

Sep. 2016 – Apr. 2021

INTERESTS

Classical Piano | Taekwondo | PC Building | Domino Building | Super Smash Bros. | Foodie | Music Lover | Car Enthusiast