Nathan Rogers

3329 48th Ave NE — 603-400-7544 — portfoliio ⬈ — Linkedin in — GitHub: torn8to ⍟

Professional Summary

Junior Robotics Engineer seeking to leverage hands-on experience in Sensor Processing, Mapping, Navigation. Building robust navigation and mapping systems for autonomous robots. Incorporating deep vision models and training them for efficient inference on edge devices. —————————— EXPERIENCE
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Experience

Robotics Engineering Intern   *Smartapp*
West Warwick, RI   *2021-2022*

- Developed and tested a handheld sensor platform for the development of algorithms for mobile robotics applications.

- Combined opensource sfm pipelines with 3d structural data to model and measure and provid insight using BIM information.

Consulting Embedded Engineer   *Freelance/Part-Time Role*
Remote   *2020 - 2021*

- Designed Electronics hardware and programmed stm32h7 chips an absolute force sensor matrix.

- Built web ui for sensor data visualization and analysis speeding up data analysis and reducing expirement time by 87%

- Built a Camera integrated with an edge ai processor deployed with a distilled perfomant image segmentation for manufaturing quality control

Education

Bachelor of Science in Robotics Engineering   *Worcester Polytechnic Institute*
*Worcester, MA*   *2019-2023*
Relevant Coursework: Robotics Manipulation, Robotics Design, Digital Electronics, Computer Vision, Machine Learning, Software Engineering

Skills

- **Programming Languages**: C/C++, Python, SQL, Cuda

- **Robotics Technologies**: ROS/ROS2, Gazebo, Docker, KiCad

- **Machine Learning**: Pytorch, Weights and Biases,

- **Electronics**: I2C, CAN, SPI, UART,

Projects

- **Sensor Agnostic Lidar SLAM** ⬈: Developed a sensor agnostic lidar with optional odometry with an efficient and robust cpu based icp registration achieving an average of 40fps and a backend loop closure detection using birds eye view image matching and pose graph optimization for improved global positional accuracy.

- **Imu Estimation Kalman Filter** ⬈: Developed an imu Extended Kalman Filter for sensor fusion of imu and odometry data. To determine accelerometer and gyroscope bias. To determine bias of an imu in conditions when lacking a warmup period for efficient imu integration.

- **Quadraped Learning to Walk** ⬈: Teaching a Quadraped robot to walk using reinforcement learning through Proximal Policy Optimization. Utilizing real2sim techniques to bridge the gap between simulation and real world.

- **Cuda Iterative closest Point Registration**⬈: Robust scan to map icp registration algorithm using cuda gpu for efficient registration of improving registration speed up by 3.75x on average compared to 16 core cpu.