Rohan Gangakhedkar

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Education

Masters of Science in Mechatronics and Robotics Sep. 2021 – May. 2023
New York University - ***CGPA - 3.96*** *New York, USA*

Bachelor of Mechatronics Engineering (Honours) w/ First Class Honours Feb. 2017 – Nov. 2020
The University of Auckland *Auckland, New Zealand*

Relevant Projects

Mobile 3D Printing (Python, C++, ROS, Jetson Nano)
New York University, AI4CE Lab

- Designed, integrated and deployed a PCB to unify the motion, and printing systems of a mobile 3D printing robot.
- Spearheaded the design and creation of a multi-DOF robotic arm, enabling optimized control for 3D printing.
- Built a simulation environment in Gazebo to validate the movement systems and printing operations of the robot.
- Constructed a multi-camera system capable of producing real-time panoramic views through seamless image stitching.

Motion Planning for a Quadrotor (Python)
New York University

- Devised and implemented a project to discretize and linearize the complex, non-linear dynamics of a quadrotor.
- Engineered a tracking controller and path planning algorithm to guide the quadrotor along a desired trajectory.
- Developed and executed an iterative LQR controller (iLQR) for flipping a quadrotor 360° mid-flight.

Vision Based Localization of a Quadrotor (MATLAB)
New York University

- Applied advanced filtering techniques to develop Kalman, Extended Kalman and Unscented Kalman Filters, successfully enabling the localization of a quadrotor in 3D space.
- Utilized advanced sensor fusion techniques to successfully combine camera-based vision data with an IMU, delivering a robust and reliable sensing solution.

Inverting a Pendulum with Model-Free Reinforcement Learning (Python, Q-Learning)
New York University

- Implemented model free Q-learning to learn a policy to invert a pendulum.
- Modified the control effort and adjusted and discount rates to optimise performance.
- Created a visualisation to observe the value function and optimal policy for each control effort.

Experience

Mechatronics Research Assistant 2020 – 2021
Robinson Research Institute *Wellington, New Zealand*

Portable Brain Imaging MRI System:

- Established a communication pipieline for embedded hardware, that enabled communication between a Superconducting Magnet Monitoring System (MMS) and external peripherals.
- Performed validation testing on the embedded software systems of the MMS.
- Designed and assembled a PCB for the MRI technician remote, and implemented its control with a BRX PLC.
- Assembled the electronics of the MMS with various DIN rail mounted components.
- Utilised Solidworks and rapid prototyping to design and fabricate components and parts for the MMS.

Summer Intern - Product and Process Quality Engineer 2019 – 2020
Compac Sorting Equipment - TOMRA Food *Auckland, New Zealand*

- Proposed a new and improved testing methodology, applying quality Engineering and Statistical methods.
- Applied Gage repeatability and reproducibility (GR&R) to evaluate the accuracy of fruit grading instruments.

Technical Skills

Programming: Python, ROS, Tensorflow, PyTorch, C, C++, C#, MATLAB & Simulink, PLC Ladder Programming
Electronics: Embedded Systems, Micro-electronics, PCB Design, Arduino, Raspberry Pi, ATMEGA
Design and Workflow: Linux (Ubuntu), Solidworks, CREO, Fusion 360, Gazebo, Adobe Illustrator, LATEX