TARUN THATHVIK PALADUGU

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My Website | LinkedIn

EDUCATION

New York University, Tandon School of Engineering, New York, NY
Master of Science, Mechatronics Robotics and Automation
Relevant Courses: Mechatronics, Optimal and Learning Control for Robotics, Robot Perception, Simulation Tools for Robotics, Robotic Gait and Manipulation

Manipal University, Manipal Institute of Technology, Manipal, KA, India
Bachelor of Technology, Mechatronics [Minor: Robotics and Automation]

TECHNICAL SKILLS

Programming: Python, MATLAB, Linux Shell Scripting, Ladder Diagrams (PLCs), C++
Basic Software: Microsoft Office, Virtual Machines, ROS, ROS2, CAD, Mission Planner, RobotStudio (ABB)
Libraries: NumPy, Pandas, OpenCV, pyAprilTag, Sci-kit learn
Microcontrollers: 8051(and similar), Parallax BS2, Parallax Propeller, Arduino, Raspberry Pi
Other Skills: Basic Machining, PLC, Hydraulics and Pneumatics, Optimal Control, Model Predictive Control, Dynamic Programming, Linear Quadratic Regulator

SELECTED PROJECTS

Solo8 Quadruped Planning and Control May 2021
- Tested a planning algorithm and, controlling a robot using the planned trajectory, on both ROS and ROS2.
- Implemented control algorithm on planned trajectory using Python.

Pose Estimation, Categorization and Segregation using Robot Manipulator (POSCAR) (GitHub) Dec 2020
- 6D Pose estimation of known objects from an RGB camera.
- Simulated Robotic arm to segregate different objects.

Quadcopter July 2020
- Built Quadcopter powered by ArduCopter microcontroller and operated by 8Ch PWD Remote Control.
- Installed GPS for Return-To-Launch (RTL) functionality.

Walking a Linear Inverted Pendulum Model (LIPM) (GitHub)
May 2020
- Implemented 'Model Predictive Controller' to enable LIPM to walk by tracing variable velocity gait generated.
- Implemented 'Push recovery' by identifying Instantaneous Capture Point to perform necessary stepping.

Industrial Goods Loading System (GitHub) May 2020
- Implemented cargo-handling system, using a 2DOF Robotic Arm, operated using Raspberry Pi.
- Used Pi Cam, and OpenCV to locate cart, operated by Arduino, for Robotic Arm to place the picked-up cargo.
- Enabled Bluetooth communication between Raspberry Pi and Arduino using HC-06.

SONAR for Visually Challenged April 2020
- Built compact-wearable device for visually challenged to perceive closeness as vibration using Parallax Propeller.

Model to avoid deaths in cars due to hypothermia and suffocation in cars Nov. 2019
- Developed solution to avoid deaths in cars due to hyperthermia and suffocation using Arduino, sensors (to detect heartbeat presence and abnormal temperature), and Bluetooth for communication between user and device.

Implement and control a differential kinematics and dynamics models of SCARA Manipulator Oct. 2019
- Simulated differential kinematics model of SCARA manipulator using MATLAB and SIMULINK.
- Implemented desired trajectory with minimum error and controlled using Inverse Dynamics control.

Controlling an inverted pendulum in ROS (GitHub) Nov. 2019
- Implemented PID controller on Simple Inverted Pendulum model simulated on Gazebo, using Python.

EXPERIENCE

Graduate Student Assistant, **New York University** Feb. 2021 – May 2021
- Implemented python code for Optimal Control and Reinforcement Learning concepts using markdown.

Robotics Program Specialist, **Probot Artistry,** Brooklyn, NY Sept 2020 – Dec 2020
- Helped compile captivating middle school curriculum for STEAM and Robotics Oriented Learning.

Project Intern, **Tata Consultancy Services,** Hyderabad, TS, India May 2018 – June 2018
- Self-taught Python and developed code to implement the DBSCAN algorithm to find outliers on given large dataset, without using any Machine Learning libraries, within 6 weeks.

Public Relations Head, **American Society of Mechanical Engineers, Manipal** April 2017– May 2018
- Created content for publication for all club events and facilitated various

Peer Help, **Dept. of Mechatronics, Manipal Institute of Technology** Jan. 2017– May 2017
- Tutored undergrad students in PLC, Micro-controller Based System Design, Mechanics of Robotic Systems

ACADEMIC ACHIEVEMENTS

Placed first in the Hack3D competition by CSAW Oct.-Nov. 2020
Merit based scholarship by the Graduate School of Engineering - NYU 2019 - 2021