Mustafa Bhadsorawala

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EDUCATION

New York University *May 2023*
Master of Science, Mechatronics, Robotics and Automation GPA 3.75
Specialization: Mobile Robotics
Reinforcement Learning | Localization and Navigation | Advanced Mechatronics

K.J Somaiya College of Engineering *May 2017*
Bachelor of Engineering, Mechanical Engineering GPA 3.4
Machine Design | Theory of Machines | Robotics

EXPERIENCE

Graduate ***Teaching Assistant, Mechatronics, Controls, and Robotics Lab*** *| NYU, NY* *Feb 2023 – Present*
Designed controllers for laboratory experiments using MATLAB/Simulink, maintained lab equipment

- Performed electrical and mechanical **systems modelling**, developed traditional controllers, **PID, LQR** for control

Robotics Project Engineering Intern, Amazon Robotics *| Seattle, WA* *Jun 2022 – Aug 2022*
Supported deployment of robots and their infrastructure at Amazon Sort Center

- Developed and documented a process for robotics floor expansion joint validation, **reducing time by 56%**
- Supported KUKA robot setup for package entry stations, performed calibration and validation of perception systems

Production/Operations Engineer, Baari Labs *| Indore, India* *Oct 2019 – Jan 2021*
Managed the operations of a 3D printing startup, production, and development

- **Managed** 3D printing **production** and **inventory**, led project to develop automated data logging software for data and root cause analysis resulting in **a 20% reduction in failure rate**
- Worked with clients on new product development, consulting on design process and manufacturing feasibility
- **Oversaw** design and **prototype of UV-C** disinfection box; delivered **within a 6-week timeline** during the pandemic
- **Trained staff** in **3D printing** and **CAD** design, built processes to track maintenance, production, inventory, logistics

Founder, 3Axes Printing Solutions *| Mumbai, India* *Dec 2017 – Sep 2019*

- **Founded** and operated a **3D printing business** offered CAD **design and prototyping** services using FDM fabrication
- Conducted new product development, creating CAD designs and prototyping using **laser cutting, sheet metal manufacturing**, and 3D printing

RELEVANT PROJECTS

Indoor Localization using IMU and Wi-Fi FTM*, Mechatronics and Robotics lab* *Jan 2022 – Present*

- Developed indoor positioning system using **state estimation** from **IMU** and **fusing** with estimation from **WiFi-FTM**

UR16e ROS2 interface and training*, Tandon Makerspace* *Aug 2022 – Present*

- **Setup UR16e** educational robot, developed training for Polyscope and **ROS2**, for hands on training
- Trained students for setting up sensor and microcontroller interface, and using robot states to program the robot

NeRF based Navigation for the blind *Aug 2022 – Dec 2022*

- **Developed a localization pipeline** for visually impaired individuals using **NeRF models with PyTorch**. Resulted in improved spatial awareness and navigation capabilities**.**
- Used **visual odometry** for tracking motion and captured image in NeRF scene for global error correction

Optimal Control of quadcopter *(iLQR)* *Aug 2022 – Dec 2022*

- Implemented **iterative LQR control algorithm** for trajectory planning of 2d quadcopter with dynamic cost functions

Autonomous Delivery Robot *Jan 2022 – May 2022*

- Interfaced **Raspberry Pi with multi-core** Propeller **microcontroller** using **UART** communication **protocol**
- Implemented Dijkstra's algorithm for path planning based on **real-time target and obstacle detection with camera**

Smart Window Blinds *Nov 2021 – Dec 2021*

- Built a smart window blind that regulates indoor temperature by controlling the amount of light and insulation
- **Re-engineered** infrared **NEC communication** algorithm for wireless control of Basic Stamp2 microcontroller

SKILLS

- **Tools:** Solidworks, C++17, Python, PyTorch, Nvidia Jetson, R-Pi, Linux, ROS, OpenCV, MATLAB, Simulink,
- **Technical Skills:** Robot Manipulation, Robot Perception, Localization, Sensor Fusion, Path planning, State Estimation, Model Predictive Control, iLQR, Additive Manufacturing