# Mustafa Bhadsorawala

New York | 1 (518) 556-8271 | mb8595@nyu.edu | [linkedin.com/in/mustafabhadsorawala/](https://linkedin.com/in/mustafabhadsorawala/)

## EDUCATION

*New York University*                                                                                                             *May 2023*
Master of Science, Mechatronics, Robotics and Automation                                                          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                                                                          3.4
Machine Design | Theory of Machines | Robotics

## EXPERIENCE

*Graduate Teaching Assistant, Mechatronics, Controls, and Robotics Lab | New York, NY*          *Feb 2023 – Present*
Designed controllers for laboratory experiments using MATLAB and Simulink for, engineering applications e.g., maglev
- Delivered lectures and led laboratory sessions, providing hands-on experience with traditional controllers, PID, LQR

*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, improving time efficiency by 56%
- Tracked product cycle of Amazon storage units, analyzed issues, and created a visual health tracking system
- 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 lab production and inventory, led project for developing a software system to automatically log data for each job manufactured in-house, Reduced failure rate from 20% to 3%
- Worked with clients on new product development, consulting on design process and manufacturing feasibility
- Oversaw design and prototype of UV-C disinfection chamber delivered within a 6-week timeline during the pandemic
- Trained people 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*
- Designed an extended Kalman filter for pedestrian state estimation with BNO055 9-axis inertial measurement unit
- Developed sensor fusion algorithm to fuse Wi-Fi FTM data with IMU data, improved localization accuracy by 20%

*UR16e ROS2 interface and training, Tandon Makerspace*                                               *Aug 2022 – Present*
- Setup UR16e educational robot, developed training for Polyscope and ROS2, built launch files 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*
- Built localization pipeline in PyTorch for visually impaired persons employing NeRF (Neural Radiance Field) models
- Used visual odometry for tracking and localizing in the real world and trained NeRF scene representation of the same

*Optimal Control of quadcopter (iLQR)*                                                                       *Aug 2022 – Dec 2022*
- Implemented iterative LQR control algorithm for trajectory planning of a 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*
- Engineered 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