

# Murtaza Khuzema Basuwala

**Address:** Walzweg 1D, Menden (Sauerland), Gemany  
**Phone:** +491792673926  
**E-Mail:** murtazab22@gmail.com  
**Date of Birth:** 12th June, 1995  
**Nationality:** Indian  
**Github:** [github.com/murtazabasu](https://github.com/murtazabasu)  
**LinkedIn:** [linkedin.com/in/murtaza-khuzema-basuwala-b07273107](https://linkedin.com/in/murtaza-khuzema-basuwala-b07273107)



## Experience

---

- 10.2020 - Present** **OBO Bettermann Group**  
*Industrial Engineer*
- **Objectives:** Industry 4.0, Predictive Maintenance, Data Visualization and Exploration, Machine Learning, Deep Learning, AI.
  - **Tools:** ViewSystems, Python, Schaeffler Smart Utility, OPC-UA Interface.
- 10.2019 – 09.2020** **Student Research Assistant at Fachhochschule Südwestfalen Soest, Germany**
- **Objectives:**
    - Design and test reinforcement learning, deep learning, and machine learning algorithms.
    - Worked with the company Bültmann GmbH, to analyse their data and improve their production using machine learning.
  - **Tools and Libraries:** Python, Pandas, Pytorch, Numpy, Matplotlib, Seaborn, Scikit-Learn, etc.
- 07.2017 – 08.2017** **Intern at Ashok Leyland Ltd (R&D Centre), Chennai, India**
- **Objectives:**
    - A four-wheeler assembly was designed for a heavy vehicle to withstand the weight of the engine, radiator, transmission, and exhaust system.
    - Run the vibration analysis of the assembly to analyse the frequency of vibration based on real world simulation.
  - **Tools and Libraries:** CATIA, Enovia

## Education

---

- 04.2018 – 09.2020** **Master of Science in Systems Engineering and Engineering Management (CGPA-1,6)**  
*Fachhochschule Südwestfalen, Soest, Germany*  
**Focus areas:** Machine Learning, Deep Learning, Reinforcement Learning, Advanced Production Engineering, Modelling and Simulation of Mechanical Systems.  
**Other areas:** International Project Management, Integrated Management and Business & Engineering.
- 08.2013 – 05.2017** **Bachelor's in Mechanical Engineering (CGPA – 1,8)**  
*Sri Sairam Engineering College, India*  
**Focus areas:** Machine design, Production Engineering, Kinematics and Dynamics of Machines, Operations Research.

# Master Thesis

---

**12.2019 – 09.2020    Coordination of two Universal Robot (UR5) in ROS/Gazebo with Reinforcement Learning algorithm – Proximal Policy Optimization (PPO) – Grade – (CGPA – 1,0)**

*Fachhochschule Südwestfalen, Soest, Germany*

- **Objectives:**

Coordination of two UR5 robots with Robotiq 85 grippers to reach a common target position using reinforcement learning, so that one robot can transfer an object to another.

- Developing robot environment for training the RL agent.
- Training a UR5 robot with Robotiq 85 gripper to reach random targets using reinforcement learning, and then testing it additionally to reach new targets.
- Coordination of two UR5 robots with Robotiq 85 grippers to reach a common target position using reinforcement learning, so that one robot can transfer an object to another.

- **Tools and libraries:** Python, PyTorch, ROS/Gazebo

## Projects

---

**10.2020 – 11.2020    Identifying Pneumothorax Disease using UNet – CNN (Deep Learning)**

- A UNet was developed using Convolution Neural Networks to learn the chest X-ray images provided by the Society for Imaging and Informatics in Medicine (SIIM).
- The X-ray images were pre-processed using image augmentation libraries and then given as input to the model.

- **Tools and libraries:** Python, Pandas, PyTorch, Scikit-Learn, Matplotlib, Numpy, Seaborn, Albumentations

**09.2015 – 03.2018    Controlling a mobile robot (Turtlebot3) in ROS to reach random target position using Reinforcement Learning**

- The mobile robot learns to reach a random target position using various reinforcement learning algorithms such as Q-Learning, Actor-Critic, and Proximal Policy Optimization (PPO).
- If the mobile robot is trained on sufficiently random targets, it generalizes to reach new targets on which it has never been trained on.

- **Tools and libraries:** Python, PyTorch, ROS/Gazebo, Matplotlib, Numpy

**09.2015 – 03.2018    Motion Control of a Peristaltic Sorting Machine (PSM) using Reinforcement Learning**

- To develop a reinforcement learning agent for the actuator of the PSM machine to reach random parcel position in the most efficient way.
- Advantage Actor.Critic (A2C) was used as the RL agent for the PSM environment.

- **Tools and libraries:** Python, PyTorch, Numpy, Matplotlib

**09.2015 – 03.2018    Non-linear controller for a Bioreactor System (Advanced Control Technology)**

- To develop and design a linear and a non-linear controller to control the non-linearity of the bioreactor system.

- **Tools and libraries:** Matlab/Simulink

## Certifications

---

1. Deep Learning Specialization, *deeplarning.ai*, Coursera  
*Focus Area:* Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Neural Networks and Deep Learning, Structuring Machine Learning Projects, Sequence Models, Convolution Neural Networks.
2. Reinforcement Learning Specialization, *Alberta Machine Intelligence Institute*, Coursera  
*Focus Area:* Sample-based Learning Methods, Prediction and Control with Function Approximation.
3. Deep Neural Networks with Pytorch, *IBM* Coursera
4. Python Programmer, *Datacamp*
5. Python Bootcamp: Python 3, *Udemy*
6. Using OpenAI with ROS, *The Construct*
7. TF Ros 101, *The Construct*
8. ROS Control 101, *The Construct*

## Skills

---

- **Skillset:** Machine Learning, Deep Learning, Deep Reinforcement Learning, Robotic Programming, Advanced Production Engineering.
- **Programming Languages:** Python, MATLAB & Simulink, basics of SQL and R.
- **Python Libraries:** PyTorch, TensorFlow, Keras, Gym, Scikit-Learn, XGBoost, Numpy, Pandas, Plotly, Seaborn, Matplotlib, Flask, Streamlit, Rospy.
- **Tools and Technologies:** ROS, Microsoft VS Code, Spyder, PyCharm, Sublime Text, Jupyter Notebook, GitHub, AutoCAD, Catia V5, MS Office, MS Project, MS Publisher.
- **Operating Systems:** Windows, MacOS, Linux (Ubuntu).
- **Interpersonal Skills:** Public speaking, Team player, Adaptability.
- **Languages:** English, German (B1), Hindi, Tamil, Gujarati, Urdu, Arabic (writing & reading).

## Hobbies

---

- Painting, Cricket, Reading, Running.