

# Murtaza Khuzema Basuwala

**Address:** Walzweg 1D, 58710 Menden, Germany  
**Phone:** +49-1792673926  
**E-Mail:** murtazakmb@outlook.com  
**Date of Birth:** 12th June, 1995  
**Nationality:** Indian  
**Github:** [github.com/murtazabasu](https://github.com/murtazabasu)  
**Portfolio:** <https://murtazabasu.github.io>  
**LinkedIn:** [linkedin.com/in/murtaza-khuzema-basuwala-b07273107](https://www.linkedin.com/in/murtaza-khuzema-basuwala-b07273107)



## Experience

---

- 03.2021 – Present** **ViewSystems GmbH**  
*Software Developer and AI Engineer*
- **Objectives:** Software Development, Providing AI solutions using Machine Learning and Deep Learning, Data Cleaning, Feature Engineering, Industry 4.0, Predictive Maintenance, Data Visualization and Exploration.
  - **Tools:** Python, C#
- 10.2020 – 02.2021** **OBO Bettermann Group**  
*Industrial ML 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, ROS, Pandas, Pytorch, OpenCV, Numpy, Matplotlib, Seaborn, Scikit-Learn, etc.

## 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 Control Technology, 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) (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, OpenCV, 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, OpenCV, 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, C#, C++ (Fundamentals), ROS, 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.

## Hobbies

---

- Painting, Cricket, Reading, Running.