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Experience

10.2020-Present	**OBO Bettermann GmbH** *Industrial Engineer* • Improving the efficiency of the production using machine learning • Fault detection and prediction using machine learning • Robot automation
10.2019-09.2020	**Research assistant at the Fachhochschule Südwestfalen Soest, Germany** • Execute and test code designed for reinforcement learning and machine learning • Visualizing and processing data using Pandas • Worked with the company Bültmann GmbH, where our task was to analyse their production data set using pandas and use machine learning algorithms to find ways to improve their production efficiency. • **Software used: ROS/Gazebo, Python | Deep Learning Framework: Pytorch**
07.2017-08.2017	**Internship – Ashok Leyland Ltd (Research & Development Centre), Chennai, Indian** • A frame assembly with CATIA was designed for a four-wheeled heavy vehicle to withstand the weight of the engine, radiator, transmission, and exhaust system. • Run the vibration analysis of the assembly with ENOVIA to analyze the frequency of vibration based on real world simulation.

Education

04.2018 – 09.2020	**Fachhochschule Südwestfalen, Soest, Germany** *M.Sc. Systems Engineering & Engineering Management* **Focus Area:** Advanced Control Technology, Systems Engineering (Machine Learning and Reinforcement Learning), Advanced Production Engineering, International Project Management.
2013 – 2017	**Sri Sairam Engineering College, Chennai Tamilnadu, India** *Bachelor's in Mechanical Engineering (CGPA - **1.8**)*

Master Thesis:

Jul 2019-Present	**Fachhochschule Südwestfalen, Soest, Deutschland** *Coordination of two Universal Robots (UR5) in ROS/Gazebo with reinforcement learning (artificial intelligence) algorithms like Proximal Policy Optmization (PPO)* • **Task 1**: Training a UR5 robot with Robotiq 85 gripper to reach random targets using reinforcement learning, and then testing it additionally to reach new targets. • **Task 2**: 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.

- Once the robots are trained properly, they can easily be generalized to similar tasks.
- State-of-the-art Proximal Policy Optimization (PPO) is used as the RL agent for the robot environment.
- **Software used: ROS/Gazebo, Python | Deep Learning Framework: Pytorch**

Projects:

02.2019-03.2019	***Controlling a mobile robot (Turtlebot3) in ROS to reach random target positions using Reinforcement Learning (AI)*** • 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 to sufficiently random targets, it generalizes to reach new targets on which it is never trained to reach on. • **Software used: ROS/Gazebo, Python	Deep Learning Framework: Pytorch**
11.2018-02.2019	***Motion control of the Peristaltic Sorting Machine (PSM) using Reinforcement Learning (AI)*** • To develop a Reinforcement Learning agent for the actuator of the PSM machine to reach random parcel positions in the most efficient way. • Advantage Actor-Critic (A2C) was used as the RL agent for the PSM Environment • **Software used: Python	Deep Learning Framework: Pytorch, Keras**
10.2019-03.2020	***Design a robot station using AutoCAD Inventor to assemble a UR5 robot*** • Design of a robot station for my laboratory in the Fachhochschule Südwestfalen for the assembly of a UR5 robot for research purposes.
04.2018-08.2018	***Project plan for the construction of a Power Plant (international project management)*** • To develop a project plan for the construction of a power plant (international project management) • **Software used: MS Project**
04.2018-08.2018	***Non-linear controller for a Bioreactor System (Advanced Control Technology)*** • To develop and design a linear and non-linear controller that can control the non-linearity of a bioreactor system. • **Software used: Matlab/Simulink**
04.2018-08.2018	***Modelling and Simulation of Mechanical Systems*** • Estimation and calculation of pressure loads, thermal loads and other factors for a thin concrete fin with a variable rectangular cross-section. • **Software used: Matlab/Simulink**
07.2016-04.2017	***Bachelor Thesis - Prosthetic-Attachment in Four Wheelers for People with Disabled Legs*** • Design and manufacture of a prosthetic attachment in a four-wheeler that can help people with disabled legs to ride a four-wheeler. • **Software used: SolidWorks, ANSYS, CATIA**
12.2015-04.2016	***Bachelor Mini Project - Development of a Ratchet & Pawl mechanism to generate eco-friendly energy*** • Generate electricity by designing and manufacturing a mechanism that can convert the linear motion generated by a speed breaker into electricity. • **Software used: AutoCAD, CATIA, Creo**

Accomplishments:

Jun 2020	• Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization (Coursera)
Jun 2020	• Structuring Machine Learning Projects (Coursera)
May 2020	• Deep Neural Networks with Pytorch from IBM (Coursera)
Feb-May 2020	• Reinforcement Learning Specialization from University of Alberta and Alberta Machine Learning Intelligence Institute (Coursera)
Apr-May 2020	• Neural Networks and Deep Learning offered by deeplearning.ai (Coursera)
Feb-March 2020	• Python Programmer (DataCamp)
Feb-March 2020	• Python Bootcamp: Python3(Udemy)
Dec 2019	• Using OpenAI with ROS (The Construct)
Dec 2019	• TF ROS 101 (The Construct)
Dec 2019	• ROS Control 101(The Construct)
Jan 2017	• Professional in Product Design – CADD Centre Chennai

Skills:

Technical	• ROS (Robotic Operating System) (Good) • Python (Good) • Spyder (Good) • Jupyter Notebook (Good) • MATLAB/Simulink (Good) • AutoCad Inventor (Good) • CATIA (Good) • MS Project (Good) • MS Office (Good)
Organisational	• Loyal • Optimistic • Creative
Languages	• English (C1) • German (Goethe, B1) • Hindi, Gujrathi, Urdu, Tamil (Native)