**Mohammad Haadi Akhter**

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**EDUCATION**

**Aligarh Muslim University Aligarh, India Nov 2021 – Present**

Bachelor’s of Technology, Computer Engineering. GPA - 8.84/10

*Relevant Coursework – Computer Architecture, Data Structures and Algorithms, Applied Machine Learning*

**ACADEMIC PROJECT**

**Proximal Policy Optimisation (PPO) with GAE and Trust Region Policy Optimisation (TRPO) for Half Cheetah Environment**

* **Implemented** the PPO with Generalized Advantage Estimation (GAE) & TRPO algorithm and developed an RL agent for Google Brax’s Half Cheetah environment

**Inverse Reinforcement Learning algorithms applied to autonomous systems with GPU accelerated libraries - Flax and JAX**

* **Working** on developing an agent using inverse RL that could mimic the behavior of a human driver, with the help of GPU accelerated libraries that will significantly reduce the training and inference time and provide an agent that can navigate easily in heavy traffic

**PUBLICATION**

**Autonomous Vehicle Architecture within CARLA: A Comprehensive OverviewSmart Mobility and Logistics Ecosystems (SMiLE) Conference 2024**

* Worked on developing the navigation stack of the software suite in simulation as well as hardware.
* Integrated the all the modules for inter-process communication using ROS framework and also contributed to developing the perception stack and processing point-cloud data.

**Autonomous Underwater Vehicle’s Control System Design Implementation- IEEE Power, Instrumentation, Energy and Control (PIECON) Conference 2023**

* Designed a PID based controller for stabilizing the auv and maintaining a constant depth under underwater.
* Worked on an MPC based controller for developing the control of the auv.

**WORK EXPERIENCE**

**Manchester Metropolitan University Remote Student Research Intern June 2024 - Present**

* **Explored** state-of-the-art reinforcement learning algorithms to enhance the manipulation of deformable objects using a robotic arm, improving control and adaptability in complex environments.

**Indian Institute of Technology, Ropar Ropar, India Student Research Intern June 2023**

* **Researched** and developed solutions for Accurate GPS Estimation of Long-Range Objects using a monocular drone camera, improving precision in drone-based navigation.
* **Explored** and simulated tethered drone models utilizing Gazebo and ROS, optimizing drone control and behavior in long-range scenarios.
* **Developed** and tested algorithms that enhanced GPS estimation accuracy for long-range object detection, advancing drone technology applications.

**EXTRA-CURRICULAR ACTIVITIES**

**Chairperson, Marine Technology Society - AUV Club, ZHCET Aligarh March 2022 - Present**

* **Organized** and coordinated workshops, competitions, and events for college students as part of the club under the supervision of Prof. Saleem Anwar Khan.
* **Led** the research and development team, introducing contemporary AUV methodologies for navigation and control, and guided the team toward national and international autonomous underwater vehicle competitions.
* **Developed** a robust object detection model for underwater environments, contributing to the team’s third-place finish at the national-level AMU ROVC 2.0 competition.

**SKILLS**

Languages – Hindi (Native), English (Proficient)

**ICT –** Reinforcement Learning, Statistics, Machine Learning, Deep Learning, Computer Vision, Applied Control Systems, Python, C++, Tensorflow, Pytorch, Pytorch-Lightning, Brax, OpenCV, ROS, Gazebo.

**Certifications –**