ARYA DAS

github.com/aryadas98 · linkedin.com/in/aryadas98
aryadas98@gmail.com · +91-8420233990

EDUCATION

Indian Institute of Technology Kanpur *Aug 2022 - Present*
Doctor of Philosophy, Aerospace Engineering (Flight Mechanics and Control) CGPA: 9.33/10

Indian Institute of Technology Patna *Aug 2017 - May 2021*
Bachelor of Technology, Computer Science and Engineering CGPA: 8.69/10

Key Courses: Artificial Intelligence, Deep Learning, Bio-Inspired Robotics, Algorithms, Data Structures, Databases, Operating Systems, Computer Networks, Computer Architecture, Computer Security, Linear Algebra, Multivariable Calculus, Differential Equations, Probability Theory

EXPERIENCE

Project Associate, Indian Institute of Technology Kanpur *Aug 2021 - Jul 2022*
Currently working at the Space Dynamics and Flight Control Laboratory under Prof. Dipak Kumar Giri. We are working on developing a 5-dof frictionless satellite simulator. I am primarily working on the software and simulation aspect of the project.

Google Summer of Code Developer, AerospaceResearch.Net *May 2018 - Aug 2018*
Worked on the Distributed Ground Station Network (DGSN) – a global network of small tracking stations. Made a preliminary orbit determination and propagation system for LEO satellites.
Blog: https://aerospaceresearch.net/?p=929

PUBLICATIONS

A. Das, R. Halder, A. Thakur *"Deep Reinforcement Learning-Based 3D Exploration with a Wall Climbing Robot"* IEEE TENCON 2021

PROJECTS

5-dof Satellite Simulator *August 2021 - Present*
Under Prof. Dipak Kumar Giri

I am working on the simulation and software of a 5-dof frictionless satellite simulator. The platform consists of 2 parts - lower and upper. The lower part uses linear air bearings to float on a thin film of air. The upper part is a 3-dof Attitude Determination and Control System (ADCS) that can be used to test various control algorithms. It is attached to the lower part by a hemispherical air-bearing.

RL-based 3D Exploration with a Wall Climbing Robot *July 2020 - May 2021*
Under Prof. Raju Halder and Prof. Atul Thakur

We applied deep reinforcement learning to perform efficient exploration in a 3D space using a wall climbing robot. A paper regarding this work was accepted at the IEEE TENCON 2021 conference. This is my senior year project.

UAVs for Disaster Management, Innovation Lab Project *Jan 2019 - Apr 2019*

Under Prof. Jimson Matthew

We built an UAV to help during disasters. It can fly autonomously on a pre-programmed path. It looks at the ground using a camera and uses machine learning to detect poses of humans. If any human appears to be in danger, it reports the coordinates to the ground station.

Orbitdeterminator, AerospaceResearch.Net *May 2018 - Aug 2018*

This was my Google Summer of Code project. I worked on determining the orbit of LEO satellites using data gathered by small ground stations. These ground stations were not ready then, so I worked on a simulation.
Blog: https://aerospaceresearch.net/?p=929

MR1 and MR2, ABU Robocon 2019 *May 2018 - May 2019*

My university participated in the ABU Robocon competition in 2019. We made two robots - MR1 (an omnidirectional picking and throwing robot) and MR2 (a quadruped). I wrote software and control algorithms for both of them. We were among the top 25 teams in the India finals.

eYantra Robotics Competition, IIT Bombay *Sept 2018 - Mar 2019*

Our problem statement was to autonomously make an UAV fly through a set of hoops. We were successfully able to complete all the tasks. I worked on the vision, control, and path planning systems.

CLUBS AND ACTIVITIES

NJACK, Computer Science Club of IIT Patna *Aug 2018 - Aug 2020*

I was the coordinator of Open Source Department of NJACK. I organized NJACK Winter of Code 2018, which is a month long open source coding event. I have conducted presentations and held some classes for club members.

Tinkerer's Lab *May 2018 - May 2019*

This is a lab for tinkering with various things (mostly related to robotics). I was an active member in this club and participated in various projects and competitions. I also guided several juniors.

SKILLS

Programming Languages: Python, C++, Java
Tools and Packages: OpenCV, ROS, NumPy, Tensorflow, MATLAB, Simulink
Other: Web Development, Android Development

OTHER ACHIEVEMENTS

- Received the Prime Minister's Research Fellowship (PMRF) Direct Entry Cycle 9 2022.
- Qualified for International Collegiate Programming Contest (ICPC) 2019 India regionals.
- Qualified for the Kishore Vaigyanik Protsahan Yojana Fellowship (KVPY) 2017.