

JASMINE JERRY ALOOR

Robotics and Control Systems Enthusiast

✉ jasminejerry@yahoo.in

☎ +91-9845468257

🌐 jaroan.github.io/jasminejerry

🔗 github.com/Jaroan

📌 [jasminejerrya](#)

EDUCATION

Bachelor and Master of Technology (Dual Degree) Aerospace Engineering, Minor : Computer Science
Indian Institute of Technology (IIT), Kharagpur

★ *GPA* : 9.44/10

📅 Jul 2017 – Ongoing

Higher Secondary School Certificate Examination
Kendriya Vidyalaya DRDO, Bangalore (Affiliated to the CBSE)

★ *Secured* : 98.4%

📅 2017

EXPERIENCE / PROJECTS

1. Multi-Hexarotor Collaborative Target Tracking Problem with Control Barrier Functions

Prof Debasish Ghose, Aditya Hegde, Aerospace Engineering, Indian Institute of Science (IISc)

📅 Dec 2019 – Dec 2020

- Implemented a range, pose and trajectory control for a pair of UAVs to move to a fixed target in ROS-Gazebo simulation environment.
- Used a camera based **ArUco** marker detection system to estimate positions of different agents present without the need for inter-agent communication.
- Developed an obstacle avoidance mechanism using **navigation vector fields** and **control barrier functions** for the agents to navigate known obstacles.

2. UAV Optimal Coverage Path Planning for Pest Detection and Spraying through Visible Camera Imaging, Bachelor's Thesis-1

Prof NK Peyada, Aerospace Engineering, IIT Kharagpur

📅 Aug 2020 – Present

- A joint project with the Department of Agricultural Engineering, to detect patches of infested crop and provide them local attention by spraying insecticide.
- Simulated an aerial robot to traverse in a crop field to locate the infested region, represented by ArUco Markers.
- Planned an optimal trajectory, using **Rotating Calipers Algorithm**, given a convex hull of the field to minimise UAV turns (energy) and path length.

3. FLYing manipULATOR-Aerial manipulation System, DAAD WISE Scholarship

Prof Klaus Janschek, Chao Yao, Institute of Automation, Technische Universität Dresden (TU Dresden)

📅 May 2020 – Jun 2020

- Contributed remotely to the FLYPULATOR project, an over-actuated multirotor UAV with an attached robotic arm.
- Studied **non linear control theory**, analysed the **omnidirectional controllability** and dynamics of existing system.
- Transitioned the project software stack from existing Robot Operating System (ROS1) framework to the latest ROS2 and optimised the code.

4. Study of Box Wing Design for Application in MAVs

Prof Sandeep Saha, Aerospace Engineering, IIT Kharagpur

📅 Aug 2019 – Present

- Studied the aerodynamics of a 'box-wing' model aircraft as a fixed wing Micro Aerial Vehicle (MAV) that has a **better Lift to Drag ratio** and improved stall characteristics. Results presented at the National Conference on Wind Tunnel Testing, Kanpur, Feb 2020. [Paper](#)
- Fabricated a scaled model and performed force and moment measurement experiments in subsonic wind tunnel. [Video](#)
- Performed numerical simulations on Aeolus and XFLR5 aero-software platforms to optimise the wing parameters in the design, CFD on SU2 software.

5. Controllers for Robo-Soccer Robots

Kharagpur RoboSoccer Students Group (**KRSSG**), IIT Kharagpur

📅 Feb 2019, Nov 2020

- Developed and tested an optimized **Fuzzy control code** for PID on STM Microcontroller for the RoboSoccer SSL Robot Motors using Mamdani approach.
- Developed State Space controllers and Linear Quadratic Regulator (LQR) based optimal controller for Buck (Step-Down) Converter, Flyback Converter systems.

TECHNICAL SKILLS

Programming: C, C++, Python, MATLAB, HTML, CSS

Libraries/Frameworks: ROS, ROS2, OpenCV, NumPy, MATLAB/Simulink, MAVROS and PX4

Simulation: Gazebo, CARLA, Aeolus ASP

Software Tools: Arduino, STM, Ansys, SolidWorks, Linux

Others: Control Systems, Deep Learning, Computer Vision

TECHNICAL INTERESTS

Aerial Robotics

Control Systems

Artificial Intelligence

Computer Vision

Unmanned Systems

Aircraft Design

ACHIEVEMENTS

1) Awarded the **DAAD Working Internships in Science and Engineering (WISE)** Scholarship 2020

By German Academic Exchange Service or DAAD (Deutscher Akademischer Austauschdienst)

- Also selected for the Engineering Summer Education Program 2020, School of Engineering, University of Tokyo and IAS Summer Research Fellowship, 2020.

2) National Talent Search Examination (**NTSE**) Scholarship Awardee

By National Council of Educational Research and Training (NCERT), India

- Cleared the National Level examination in 10th Grade (2015) with State rank 3

3) Kishore Vaigyanik Protsahan Yojana (**KVPY**), 2016

By Indian Institute of Science

- Obtained the KVPY SX Scholar, Rank 260 out of 1500 rank holders

PUBLICATIONS AND PAPERS

Box Wing: Aerodynamic experimental study for applications in MAVs

Conference paper for the National Conference on Wind Tunnel Testing (NCWT-06), Kanpur

📅 Feb, 2020

Space Robotics versus Humans in Space

Conference paper for the Students' Session on the first IAA-ISRO-ASI Symposium on Human Spaceflight Programme, Bangalore

📅 Jan, 2020

Won best Paper and Presentation award

Team Description Paper of KgpKubs, 2019 and 2020

Robocup Small Sized League

COMPETITIONS

1) National Aircraft Conceptual Design Competition - II

The Aeronautical Society of India, **NACDeC-II**

📅 Nov 2018 – Aug 2019

- Won third place: Designed a LIDAR-equipped Unmanned High Altitude Platform for carrying out mapping of coastal habitats and detecting shoreline changes.

2) Boeing University Innovation Leadership Development Program (Boeing BUILD)

📅 Aug 2019

- Selected for the boot-camp and regional idea pitch event of innovative idea for High Altitude Mountainous drones.
- Designed a module mountable on such drones that can aid the armed forces and mountaineers before the actual expedition.

ACTIVITIES & LEADERSHIP

1. Co-Host, Women in Intelligent Robotics Social Event

Women in ML Workshop at NeurIPS 2020 (WiML Social)

📅 Dec 2020

2. Team Leader

National Aerospace Conceptual Design Competition (NACDeC-IV)

📅 Oct 2020- Present

- Leading a team of aerospace undergraduates to design an Inter City Electrical Vertical Take-Off and Landing Aircraft.

3. Team Leader, Co-Founder

UAV Club, Department of Aerospace Engineering IIT Kharagpur

📅 Aug 2020 - Present

- Leading a team of sophomore and junior undergraduates for the Association for Unmanned Vehicle Systems International (AUVSI) Student Unmanned Aerial Systems (SUAS) 2021 Competition.

4. Senior Editor

IIT Technology Ambit, IIT Kharagpur

📅 Sept 2019- Present

- A magazine start-up delivering latest research and technology digest right from the pan Indian Institutes of Technology (IIT) ecosystem with a 5000+ readership.
- Focused articles on the latest developments in Robotics, Aerospace and Automation Technology.

5. Embedded Electronics Team Member & Public Relations Head

Kharagpur Robosoccer Students Group (KRSSG)

📅 Mar 2018- Present

- Tested and integrated various motor drivers for the RoboSoccer robots; implemented fuzzy PID motor control technique. Guided junior members for new projects.
- Managed social media presence and sponsors.

6. Chapter Head

LeanIn, IIT Kharagpur

📅 Mar 2018- Present

- The Lean In circle encourages and helps fellow women students in looking ahead and creating a change at both the personal and community level.
- Organised a talk session with eminent professionals from India and abroad along with a Design Thinking Workshop. Interviewed notable women alumni.

7. Member

Women of Aeronautics and Astronautics, (WOAA) India Chapter

📅 Sept 2020- Present

INTERNATIONAL PARTICIPATION

SAKURA SCIENCE High School Program

Japan Science and Technology Agency (JST)

📅 April, 2016

- Invited by JST, Japan and Ministry of Human Resources Devpt (MHRD), India to experience science and technology in Japan

RoboCup Small Sized League

RoboCup Organisation

- Part of the only Indian team to qualify for RoboCup SSL (Small Sized League) in RoboCup 2018, Canada and Robocup 2019, Australia

SOFT SKILLS AND HOBBIES

Leadership, Ability to Work Under Pressure, Decision Making, Time Management, Adaptability, Teamwork, Creativity, Piano, Basketball

MENTORSHIP AND TEACHING

IEEE Winter Workshop, 2018

- Mentored a group of 40 freshmen and sophomores for the week-long IEEE sponsored workshop whose problem statement dealt with making a wireless smartphone controlled robot
- Taught intermediate autonomous robotics and basics of micro-controller architecture and programming.

Student Mentor, Student Welfare Group, IIT Kharagpur

- Mentoring a group of 6 freshmen, assisting them through the first and second semester for Programming and Data Structures course.