Sanad Shaha

Roll No.:22280
BS Electronics and Communication Engineering
Indian Institute of Science Education and Research, Bhopal

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Website
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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.S. Electronics and Communication	Indian Institute of Science Education and Research, Bhopal	8.42/10	2022-Present
Senior Secondary	Alard Public School, CBSE Board	82.0%	2022
Secondary	Spicer Higher Secondary School, ICSE Board	93.7%	2020

Experience

- **Distributed Systems and Control Lab, IIT Kanpur** *May 2025 - Jul 2025*
  Project Intern, Dr. Soumya Ranjan Sahoo Kanpur, India
  – Selected for the SURGE Internship Program and worked on UAV-based control systems
  – Designed and implemented a novel control law to achieve optimal UAV formation geometry for precise 3D moving target tracking on dynamically tilting inclines.
  – Performed MATLAB-based simulations to verify the robustness and effectiveness of the proposed approach under realistic operating conditions.

- **Multi-Agent Simulations and Control Lab, IISER Bhopal** *March 2024 - Present*
  Project Intern, Dr. Arijit Sen Bhopal, India
  – Developed a 3D target localization framework using information maximization, and derived control laws that drive multi-UAV systems to optimal formation geometry for precise estimation.
  – Conducted MATLAB simulations to validate the proposed solution, showcasing its effectiveness.

Projects

- **Safe and Autonomous Docking of an Autonomous Underwater Vehicle** *Sept 2025-Present*
  Course Project- Intelligent Robotics/ Dr. Sujit PB
  – Conducted a comprehensive literature review on control barrier functions and their applications.
  – Designed a CBF-integrated control framework that ensures stable system performance while actively enforcing state safety bounds during operation.
  – Validated the proposed control law through MATLAB simulations.

- **Self Balancing Ball on a Beam using PID Control** *Sept 2024-Nov 2024*
  Course Project- Control Systems/ Dr. Arijit Sen
  – Designed a ball-beam balancing mechanism to implement PID Control
  – Fine tuned the control gains to achieve maximum stability

Technical Skills

- **Software**: MATLAB, Simulink, AutoCAD, Verilog, LTSpice, ROS2 (basic)
- **Programming**: Python (Numpy, Matplotlib), LaTeX

Key courses taken

- **Electronics and Communication**: Linear Control Systems, Control Systems, Intelligent Robotics, Robotic Perception, Digital Circuits and Systems, Computer Organization, Analog Circuits, Electronic Devices, Principles of Communication, Signals and Systems, Basic Electronics, Electromagnetic Theory
- **Mathematics and Computer Science**: Optimization Techniques, Machine Learning, Probability and Statistics, Complex Variables, Data Structures and Algorithms, Multivariable Calculus, Linear Algebra, Discrete Mathematics

Achievements

- **Graduate Aptitude Test in Engineering- EC**, Score 452/ AIR 4672 *2025*
- **Indian Control Conference 10, 11**, Award of Student Support *2024,2025*
- **IOQM Awardee**, Qualified Indian Olympiad Qualifier in Mathematics *2021*

Positions of Responsibility

- **Volunteer**, Indian Control Conference 10 *Dec 2024*
- **Coordinator and Core Team Member**, Quiz Club, IISER Bhopal *June 2023- April 2025*