



# Sanad Shah

Roll No.:22280

BS Electronics and Communication Engineering

Indian Institute of Science Education and Research, Bhopal

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Website

LinkedIn

## 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*

## POSITIONS OF RESPONSIBILITY

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