# Aditya Raj Maheshwari

Roll No.:21BEI001

B.Tech - Electronics and Instrumentation Engineering

Institute of technology Nirma University

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## EDUCATION

| Degree/Certificate | Institute/Board | CGPA/Percentage | Year |
|---|---|---|---|
| B.Tech. Electronics and Instrumentation Engg. | Nirma University | 7.4(Current) | 2021-Present |
| Senior Secondary | CBSE Board | 90.4% | 2021 |
| Secondary | CBSE Board | 93.4% | 2019 |

## PROJECTS

- **Mission Chandra** *Sept. 2023*

  *SAC ISRO Ahmedabad, Domain: Microcontroller integration and UI development*
  - Worked with a team of 4 to develop a 1:200 scale of two-stage Chandrayan-3 launch vehicle with parachute recovery.
  - Used Arduino nano with burn wire setup for rocket separation and parachute deployment.
  - Used barometer sensor and saved real time telemetry data logs on SD card connected to onboard Arduino along with sending to ground station.
  - Created a WPF application using C# which acts as ground station and displays real time telemetry data and required graphs.
  - Developed failsafe mechanisms in case of any in-flight error to safeguard the onboard electronics.

- **Aerothon 2023 (Team Captain)** *Nov. 2023*

  *Domain: Systems Engineer*
  - Lead a team of 10 to develop a multirotor under 2kg with autonomous navigation and payload delivery capacity of 200g along with identification of four hotspots.
  - Worked with NVIDIA's Jetson Xavier NX and ArduCam 12MP camera.
  - Developed custom trained YOLOV5 algorithm for target detection and hotsopt identification.
  - Developed algorithm to prevent same hotspot detection due to hotspot being identical in nature.

- **SUAS 2023** *June. 2023*

  *AUVSI SUAS 2023: Maryland USA, Domain: Machine Learning and Autonomous Navigation*
  - Worked with a team of 10 to develop a multirotor under 25kg with autonomous navigation and five payload delivery each weighing 500g and cover path of 12miles under 30minutes.
  - Worked with NVIDIA's Jetson Xavier NX and Viewpro Q10F 14MP camera.
  - Employed a custom trained improved YOLOV5 based algorithm with transformer prediction head.
  - Developed a new autonomous navigation algorithm for payload dropping with 0.1m accuracy.

- **Aerothon 2022** *Nov. 2022*

  *Domain: Machine Learning*
  - Worked with a team of 10 to develop a multirotor under 2kg with autonomous navigation and payload delivery capacity of 200g.
  - Worked with NVIDIA's Jetson Xavier NX and ArduCam 12MP camera.
  - Used custom trained YOLOV5 algorithm for target detection.
  - Developed a relative navigational algorithm for payload delivery.

## TECHNICAL SKILLS

- **Programming**: C/C++, Python, C#
- **Databases**: MySQL
- **Operating System**: Windows, Linux
- **Other**: Data Structures and Algorithms(DSA), Keras, Tensorflow, Pytorch, ROS, OpenCV, Database Management System(DBMS), Object Oriented Programming in python, mavlink, dronekit, Arduino

## KEY COURSES TAKEN

- **Mathematics**: Calculus, Linear Algebra and Ordinary Differential Equation-I, Complex Analysis and Differential Equations-II, Numerical Methods
- **Electrical Course**: Circuit Theory,Basic electronics, Control theory, Industrial Electronics, Electrical and Electronics Measurement, Control System Design, Linear Integrated Circuits, Signals and Systems, Process Control, Transducers and Measurement
- **Computer Science**: Computer Programming, Machine Learning, Microprocessors and Microcontrollers, Cloud Computing, Data Science, Programming with Python and Matlab, Object Oriented Programming, Data Structures, Image Processing

## Positions of Responsibility

- **Team Captain**, Team Arrow, Nirma University *Apr. 2023 - Present*
- **Computer Systems Lead**, Team Arrow , Nirma University *Nov. 2022 - Present*
- **Member**, SAE Nirma Collegiate Club , Nirma University *Jul. 2022 - Present*
- **Member**, Student Chapter of the Computer Society of India , Nirma University *Aug. 2021 - Present*

## Achievements

- **Rank 5**, SAE Aerothon 2022, Banglore *Nov. 2022*
- **Rank 5 internationally**, AUVSI SUAS 2023, Maryland, USA *Jun. 2023*
- **Qualified for finales**, Mission Chandra, SAC ISRO Ahmedabad *Sept. 2023*