DEEP RUDRA

+91-7063740034 | LinkedIn | Kharagpur, West Bengal | GitHub | deeprudradr@gmail.com

EDUCATION

- **Kalyani Government Engineering College** *Nadia, West Bengal*
  Bachelor of Technology (B.Tech) in Electronics and Communication Engineering. *[2023 – Present]*
  CGPA: 7.96
- *WBCHSE – Higher Secondary Examination* **| Class XII |** Marks: **94.8%** *[2022 – Pass out]*
- *WBBSE – Madhyamik Examination* **| Class X |** Marks: **88.43%** *[2020 – Pass out]*

HACKATHONS AND PROJECTS

IRoC- U 2025 | ISRO Robotics Challenge – URSC | Team – GARUNVEER [🔗] *[Dec'2024-Apr'2025]*

Selected to develop an autonomous drone navigation system for Mars-like terrain without GNSS, focusing on safe landing, topography-based detection, and return.***[Pixhawk 2.4.8, Raspberry Pi 4B** (Main MCU)**, Pi Camera]***

- Calibrated PID control loop for precise horizontal stabilization, resulting *in* ***90%+ stable flight performance****.*
- Maintained 2m±5cm constant altitude using *HC-SR04* ultrasonic sensor.
- *Utilized MAVProxy CLI as GCS for real-time drone telemetry and MAVLink-based navigation.*

eYRC | e-Yantra Robotics Competition- 2024 | Theme: Warehouse Drone [🔗] *[Aug'2024-Nov'2024]*

Developed drone navigation system for warehouse mapping and package identification using overhead camera and path planning algorithms.

- Implemented ***CRSF protocol on ROS2 Humble*** for reliable UAV communication.
- Developed ***PID tuning GUI*** for quadcopters; included *both button-based and slider-based interfaces*.
- Integrated ***WhyCon***, a low-cost, vision-based localization system achieving millimeter precision using standard webcams, for real-time position estimation.

FPGA Circuit Design – Xilinx Vivado | *Self-project* [🔗]

- Designed and implemented combinational and sequential circuits *in Verilog.*
- Simulated, synthesized, and verified designs using waveform and timing analysis in Xilinx Vivado.

Bluetooth Controlled Car | [*Arduino Uno, HC-05 module, L298N* **] |** *Self-project* [🔗] *[Oct'2024-Nov'2024]*

- Built a Bluetooth-controlled car and developed a custom Android app for serial UART communication between smartphone and car.

Air Canvas Drawing using OpenCV | [*OpenCV, NumPy***] |** *Self-Project* [🔗] *[Feb'2025-Mar'2025]*

Built a real-time air drawing tool using OpenCV and Python, tracking a coloured marker to draw in the air.

- Applied HSV colour space conversion, contour detection, and morphological operations (erosion, dilation).
- Designed a dynamic GUI with colour selection, canvas area, and custom trackbars for colour calibration.

Smart Security Locking System for High-Security Zones | *Project Mentor* [🔗] *[May'2025-Aug'2025]*

- Developed an identity system using **ESP32-CAM**, **Android app**, and keypad-based password authentication.
- Integrated **SMTP** to automatically email images of unauthorized access attempts captured by the ESP32-CAM.
- Built a ***Flask + Socket.IO*** dashboard for live monitoring with CSV-based local logging for offline audit.

TECHNICAL SKILLS

- **Programming Languages:** C, Python, Verilog, Assembly (8085, 8086, 8051), Bash.
- **Platforms:** Raspberry Pi, Arduino, ESP32, Pixhawk, RadioLink Crossflight.
- **Tools:** Xilinx Vivado, KiCad, Proteus, Cadence Virtuoso, MATLAB, ROS2, Mission Planner.
- **Others:** Microsoft Office, Tinkercad, Wokwi, Adobe Photoshop, Adobe Illustrator.

EXPERIENCE

Member (Former Intern) – KGEC ROBOTICS SOCIETY | *Nadia, West Bengal* *[Mar'2024-Present]*

➢ Working on drone and Mars Rover projects, conducting 2 IoT workshops, and mentoring 5 junior interns.

Intern – *ADAOVI Technology* |(*Online) Bangalore, Karnataka*** [🔗]** *[Jan'2024-Mar'2024]*

- Completed a hands-on course covering ML, DL, NLP, and big data using TensorFlow, Scikit-learn, and Pandas. Built real-world projects including ***survival prediction, salary regression, lung cancer detection (CNN).***

CERTIFICATIONS

- **Quantum Computing Fundamentals** – ***CDAC & IIT Roorkee*** | [🔗] *[03 May 2025 – 25 May 2025]*
  Covered quantum algorithms, qubits, and computational models.
- **IBM Skills Build Summer Certification PBL Program |** [🔗] *[04 July 2025 – 29 July 2025]*