Roushni Sareen

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EDUCATION

Visvesvaraya National Institute of Technology, Nagpur 2023 – 2027
B.Tech in Mining Engineering *CGPA: 7.23 — Percentage: 72.3%*

St. Anthony Public School, CBSE 2021 – 2022
Class XII (Senior Secondary) *Percentage: 84.8%*

Bright Start Convent, BHSIEUP 2019 – 2020
Class X (Secondary) *Percentage: 89.4%*

EXPERIENCE

IIT (ISM) Dhanbad May 2025 – Present
Summer Research Intern
- Conducting research on AI-driven environmental forecasting using multivariate time series models.
- Co-authoring a review paper: "Mining Industry 5.0: Applications and Future Prospects."
- Developed ML pipelines for AQI and PM2.5 prediction using satellite and geospatial data.

Social Summer of Code (SSoC) June 2025 – Present
Open Source Contributor *PyTorch, Git, Github*
- Built a full federated learning pipeline using Flower and PyTorch on real chest X-ray data.
- Integrated TensorBoard, optimized client-server communication, and improved code modularity.
- Actively contributed via PRs, documentation, and mentoring new contributors.

IvLabs May 2024 – October 2024
Summer Research Intern *Embedded Systems, Wireless Communication, Hardware-Software Integration*
- Designed a gesture-controlled omnidirectional robot integrating real-time hardware-software systems.
- Implemented wireless protocols (ESP-NOW, LoRa, NRF24L01) for reliable, low-latency communication.
- Gained hands-on experience in embedded systems, sensor fusion, and system-level debugging.

PROJECTS

Gesture Controlled Omnidirectional Robot ⬤ GitHub   ⬤ Demo
Arduino, ESP32, MPU6050, ESP-NOW *May 2024 – Oct 2024*
- Designed and built an omnidirectional robot using mecanum wheels for seamless movement.
- Developed real-time hand gesture tracking with an MPU6050 sensor for intuitive control.
- Implemented ESP-NOW communication for efficient and low-latency wireless data transmission.

Real-Time Document Analysis using YOLO & Tesseract OCR ⬤ GitHub   ⬤ Demo
Computer Vision, OCR, Python *Jan 2025 – Feb 2025*
- Developed a system to extract structured text from images using real-time object detection and OCR.
- Integrated YOLO for document segmentation and Tesseract OCR for text recognition.
- Built an interactive interface to display and export extracted text effortlessly.

Chat with a Website from URL - LangChain Chatbot ⬤ GitHub   ⬤ Demo
LangChain, AI, NLP, Streamlit *2024*
- Built an AI chatbot that lets users interact with websites by extracting and summarizing content.
- Integrated GPT-4, Mistral, and Llama2 with Retrieval-Augmented Generation (RAG) for intelligent responses.
- Designed a simple and engaging UI for a seamless user experience.

SKILLS

- **Languages:** Python, C, C++, SQL, HTML
- **Tools:** Excel, Git, PyTorch, OpenCV, Streamlit
- **Frameworks:** LangChain, Flower, Tesseract
- **Protocols:** ESP-NOW, LoRa, NRF24L01

Achievements

- **Selected Contributor – Social Summer of Code (SSoC) 2025**: Chosen among nationwide applicants to contribute to open-source projects.
- **AIR 16 – SilverZone International Informatics Olympiad 2020**: Scored **80.56/100**; ranked **1st in class**, **2nd in state**.

Relevant Coursework

Mathematics, Statistics, and Computer Science

- Discrete Mathematics and Graph Theory, Probability Theory and Statistics, Calculus, Computer Programming.
- Mine Management Information Systems - ERP systems, database design, MIS architecture

Extracurricular Activities

Member, IvLabs

October 2024 – Present

- Working on deep learning and transformer-based models for computer vision tasks, focusing on improving model efficiency and accuracy.
- Organized and conducted a workshop on Python and OpenCV in collaboration with IEEE, providing participants with hands-on experience in Python, computer vision, and programming.