ROUNAK RAMAN

+91-8826879389 | rounak.raman.ug21@nsut.ac.in | Linkedin | Github | Portfolio Website

EDUCATION

B.Tech (Information Technology)	2021-2025	NSUT (Formerly NSIT), Dwarka, New Delhi	8.65 CG
CBSE (Class XII)	2021	Kulachi Hansraj Model School, Ashok Vihar, New Delhi	95.4%
CBSE (Class X)	2019	Kulachi Hansraj Model School, Ashok Vihar, New Delhi	95.2%

EXPERIENCES & INTERNSHIPS

Research and Development Intern | DRDO-INMAS | [LINK] **Jun '23-Aug '23**

DRDO CCML division of INMAS is focused on developing advanced technologies for chemical and biological warfare defense.

- **Developed and implemented** a system utilizing **Neuromore Studio** for real-time analysis and visualization of EEG data, aimed at improving focus and attention, with specific focus on **analyzing Alpha waves**.
- **Utilized** Fast Fourier Transform **(FFT)** to transform EEG data into the frequency domain, enabling calculation of average Alpha wave amplitude for providing targeted feedback to subjects.
- **Integrated multimodal feedback mechanisms** including visual feedback using candle flame brightness modulation and auditory feedback through volume adjustment of background music based on Alpha wave amplitudes.
- **Conducted** regular neurofeedback sessions to enhance subjects' focus and attention, leveraging comprehensive reports generated by Neuromore Studio and **predictive models in Python for tracking and evaluation**.
- **Demonstrated** understanding of cognitive processes and functions by analyzing EEG data and mapping Alpha wave amplitudes to visual and auditory cues, ultimately contributing to the improvement of subjects' cognitive states.

Research Intern | Department of Information Technology | NSUT | [LINK] **Aug '23-Dec '23**

Netaji Subhas University of Technology (NSUT) is one of the premier institute of India with state-of-the-art research facilities.

- **Collaborated** with the **Head of Our department** to develop and implement the novel energy-efficient algorithm, **EAHCP**, utilizing clustering for communication in **Wireless Sensor Networks**, achieving superior performance compared to stationary network algorithms.
- **Innovated** a **convex boundary hull** approach combined with **mobile nodes**, resulting in optimized energy consumption and improved network efficiency.
- **Reduced energy consumption** for each node post-data transmission rounds, leading to enhanced sustainability and longevity of the network infrastructure.
- **Utilized MATLAB** for plotting and analyzing graphs, ensuring accurate evaluation and validation of algorithm performance.
- **Acknowledged** for exceptional contributions with a **Letter of Recommendation** for outstanding work on **algorithm development** and **paper proofreading**, with publication currently in progress.

PROJECTS

PRAGATI – Traffic Analyser and Parking Spot Detector| [LINK] **Nov'23**

- **Programmed** Pragati an innovative web software that tracks free parking spots that allow users to book them in advance.
- **Improved** the dynamic detection algorithm using **CNN** upto **92%** accuracy and developed a user-friendly interface to enhance user experience.

Generative AI Chatbot A.I.D.A-S.O.S | [LINK] **Jul '23**

*Generative AI chatbot using Real-Time Text Analysis and use of Bard API built on **Python** | **Machine Learning (Generative AI)***

- **Developed** a generative AI chatbot for people having mental health problems, app deployed using **Streamlit**
- **Can be accessed** using *aidasos.streamlit.app* from anywhere with **any device** (desktop or mobile phone).

F.R.I.D.A.Y-Facial Recognition,Image Detection and Analysis System | [LINK] **Aug '23**

- **Spearheaded** the development of F.R.I.D.A.Y, an advanced system for real-time facial recognition, leveraging computer vision techniques and deep learning models.
- **Orchestrated** a comprehensive pipeline encompassing data collection, augmentation, model building, and real-time face detection, culminating in an efficient and robust solution for image detection and analysis.

Research Projects and Papers

Resilient Wireless Sensor Networks: Proactive Detection and Isolation of Internal and External Threat | [LINK]

- **Investigated** secure wireless networks and **devised** a new methodology to **detect and isolate malicious nodes** for military applications.
- **Published** under the reputed journal of International Conference by **implementing** the method using Omnet++ Software and **demonstrating** its use using **nfrs2** and **Arduino nano.**

EXTRA-CURRICULAR ACTIVITIES AND ACHIEVEMENTS

- **AIR 1-CN founder's Invitation Challenge. Awarded** by **Ankush Singla** Co-Founder of Coding Ninjas.
- **Department Rank Holder**. **Rank #5**
- **Winner** of Internal Hackathon by **Smart India Hackathon '23**
- **Secured SQL 50 badge** on leetcode and used this skill to create exhaustive database management system in O.P.T.V.I.S.
- **Runner-Up** in **IBM Qiskit Challenge 2022**.**Performed** exceptionally in their workshop and quantum coding challenge.

TECHNICAL SKILLS

- **Languages:** C++, Python, JavaScript , C
- **Database:** MySQL, MongoDB
- **Framework**: Nodejs, ExpressJs, React, Redux, Stripe
- **Other technical Skills:** DSA, MATLAB, SIMULINK, OOPS, GIT, GITHUB
- **Other Softwares:** Tensorflow, Omnet++, INET, Arduino, PowerBI, LINUX, OpenAI, OpenCV