

SARTHAK JAIN

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Education

Guru Gobind Singh Indraprastha University, New Delhi, India <i>Bachelors of Technology in Computer Science Engineering</i>	2021-2025 CGPA: 8.64/10
DL DAV Model School, Shalimar Bagh, New Delhi, India <i>Senior Secondary (Class XII)</i>	2019-2021 Percentage: 91.1/100
Delhi Public School, Sonapat, Haryana, India <i>Secondary (Class X)</i>	2007-2019 Percentage: 94/100

Research Experience

- **Indiana University Bloomington, USA** Feb 2024 (Ongoing)
Undergraduate Researcher | Advisor: [Dr. Apu Kapadia](#) & [Dr. Arun Balaji Buduru](#)
 - Addressing problems in the field of child unsafe content detection with aspect of both consumption & distribution.
- **Indraprastha Institute of Information Technology, Delhi** Nov 2023 (Ongoing)
Undergraduate Researcher | Advisor: [Dr. Arun Balaji Buduru](#)
 - Addressing problems i.e. speech emotion recognition (multilingual) & violence detection (real world scenario). Implemented catastrophic forgetting, zero shot evaluations, fine tuning, model weight averaging (stochastic, model soups, exponential), signal processing, feature extraction, resampling audios (16kHz). Used: DNN embedding system (X-Vectors), ECAPA TDNN, MFCC, LFCC, pre-trained transformers, Wav2Vec2, Neural Networks, stereo to mono conversions, Flask (Backend), React (Frontend).
- **Indian Institute of Technology Ropar, Punjab** Sep 2023 - Nov 2023
Research Assistant | Advisor: [Dr. Suman Kumar](#)
 - Engaged in 'BLE-based Power-Efficient Design for Cow Health Monitoring system' using accelerometer sensors (LIS3DH). Utilized IOT, Embedded Systems, MATLAB and Python for h/w, s/w, graphical analysis, statistics etc. Investigated data packet transmission over a network (data fetched via API (convert json(raw) to csv)), incorporated Gateway, Node (custom PCB), GSM & Bluetooth modules, Zephyr RTOS, MQTT test client, AWS Lambda, Flutter (Frontend).

Internships (Technical)

- **Indian Institute of Technology, Ropar (iHub-AWADH)** June 2023 (Ongoing)
Software Development Engineering Internship
 - Developed a robust Cow Health monitoring system for Mooofarm and a Weather Application for Agvisi. Technologies used: machine learning (random forest algo), AWS console (for managing tables, DB, Lambda function, Amplify), contributing to CI/CD pipeline, Android Studio, Flutter, React, Unix epoch timestamps, Git/GitHub, light, temperature & humidity sensors.
- **The Hello World, Bangalore** June 2023 - Aug 2023
Software Development Internship
 - Contributed to full-stack web development, utilizing technologies such as ReactJs for the frontend, Node.js for the backend, and MySQL for database management. Integrated APIs for enhanced functionality and implemented a robust CI/CD pipeline for seamless development, testing, and deployment. Collaborated on project management and issue tracking using JIRA, ensuring efficient coordination and workflow transparency. Version control was facilitated through GitHub.
- **Saint Louis University, USA** May 2023 - June 2023
Data Visualization Internship
 - Applied data analytical skills to analyse & make inferences on large researched dataset created by our team. Plotted various bar graphs, pie chart, histograms etc. for visual representation. Timely delivered group assignments and presentations.
- **Saint Louis University, USA** May 2023 - June 2023
Project Management Internship
 - Served as a Team Leader, engaged myself in allocating tasks, taking timely updates and queries from everyone & deliver group presentations. For some, language and showing up on camera become an obstacle being from unprivileged countries, but still managed and convinced them.

Community Service & Social Work

- **She Can Foundation** Jan 2024 - Feb 2024
Fundraising internship
- **NbliK** Sept 2022 - Dec 2022
Community Manager Internship
- **Hamari Pahachan NGO (HPNGO), New Delhi** Nov 2022 - Dec 2022
Digital Marketing Intern

Projects

Cow Health Monitoring System [Git](#) June 2023 - Nov 2023

Guided by Dr.Suman Kumar (Prof. IIT Ropar), developed a Real-Time Cow Activity Monitoring System for analysing cow's health. Employed technologies: ML, AWS (cloud), Flutter, Dart, Python, Lambda. Hardware: accelerometer, NRF5340DK BLE PCB (gateway), GSM, wifi and Bluetooth modules.

Illegal Car Tracking System using ML [Git](#) May 2023 - July 2023

Implemented real-time Deep Learning and OCR system to capture license plates, mitigating congestion from external car influx in dense urban areas like New York, New Delhi, Tokyo, Shanghai.

After certain days, non-native plates trigger owner alerts, urging timely state exit, using Twilio client service.

Internet Security Analysis using ML [Git](#) May 2023

Internet security is vital as attackers often target vulnerabilities. This project explores ML-based Internet Security Analysis, leveraging patterns in network traffic data.

Complaint Reporting System [Git](#) Nov 2022 - Feb 2023

A real-time Python and MySQL-based system, reports crimes (frauds, robbery etc.) and social issues (dirty parks, garbage etc.).

Medical Store Stocks Manager [Git](#) June 2022 - August 2022

Efficient medical store inventory management system: Real-time, Python-based with user-friendly TKinter GUI and MySQL database.

Casino - A Game of chance [Git](#) Oct 2021

A virtual game in C, C++ and command line tools: Player starts with money, rolls dice. If favorable, large money increments to the acct. if unfavorable, smaller deduction takes place.

Technical Skills

Programming Languages: C/C++, Python, Java, Dart, Matlab,

Web Technologies: HTML, CSS, Bootstrap, NodeJS, React, Flutter, Wordpress

Databases and Cloud: MySQL, AWS

Machine Learning and Deep Learning: OpenCV, TensorFlow, OCR, NLP(Natural Language Processing), PyTorch

Version Control and Collaboration: Github, Git

Hardware and microcontrollers: Arduino, Raspberry Pi

Key Courses Taken

Core CS: Computer Architecture & Logic Design, Compiler Design, O.S, DBMS, Software Engineering, Computer Network, OOP

Mathematics: Applied Mathematics I & II, Discrete Maths, Computational Methods, Probability & statistics I & II

Programming Languages: C & C++, Python, Java(Core & Advanced), Matlab, HTML/CSS

Recommendations

Dr.Suman Kumar : Assistant Professor of EE Department at Indian Institute of Technology, Ropar, India. [Link](#)

Mr.Ismail Khan: Chief Operating Officer (COO) at Hello World Technologies, Bangalore, India. [Link](#)

Dr.Mohammed Aslam: Assistant professor at Mathematics department of Guru Gobind Singh Indraprastha University.[Link](#)

Activities, Awards and Participations

CodeChef competitive programming: Max 3 stars (Highest rating 1543)

IEEE WebDev Hackathon: Among top 8 teams to reach the final round

IRC Robotics Competition: 2nd Rank Holder at district level

Google AI— Explore ML: Attended the intermediate track

World Wide Fund for Nature: Attended webinar on 'Snow leopard conservation'

Inter DPS Lawn Tennis Competition: 1st Rank Holder

Upcoming Publication (under review)

BLE-based Power Efficient Design using Accelerometer for Cow Health Monitoring System

By Radhika Raina, Lalit Kumar Baghel, **Sarthak Jain**, and Suman Kumar

Cow Health Monitoring project aims for feature extraction and selective activity transmission (resting, grazing, etc.) to the AWS database to minimize data size. This involves configuring the NRF5340DK to apply a specific threshold for achieving the goal.