Soumen Kumar

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Education

Indian Institute of Technology, Jodhpur **Oct. 2022 – May 2026**

*BTech in Computer Science and Electrical Engineering - **CGPA - 8.04*** *Jodhpur, Rajasthan*

Relevant Coursework

- Data Structures
- Machine Learning
- Algorithms Analysis
- Database Management
- Embedded Systems
- Probability Statistics
- Operating Systems
- Computer Architecture
- Design of Experiments
- Modelling and Simulation
- Intro to CS and OOPS
- Engineering Maths(I/II)

Experience

Electrical Department, IIT Jodhpur **August 2023 – March 2024**

UG Research Scholar under Prof.Amit Bhardwaj *Jodhpur, Rajasthan*

- **Engineered** vibrotactile communication patterns using the **bHaptics Tact Suit (x40)** and **Meta's Quest**, enabling real-time communication through skin for over 50 differently-abled individuals.
- **Designed** a 2x2 **vibrotactile display** with LRA actuators capable of representing all 36 alphabetic and numeric characters, increasing tactile communication efficiency by 30%.
- **Simulated** the tactile feedback system using **MATLAB**, **Arduino IDE**, **Unity**, and **Simulink**, reducing system response time by 20%.

Projects

TripSync - Ride-Sharing Platform | *Self Project* **July 2024 - August 2024**

- **Created** a ride-sharing platform supporting **Traveler**, **Admin**, and **Companion** roles, serving over 200 users within the first month of deployment.
- **Implemented** ride-sharing features, including **SMS notifications**, **real-time tracking**, an audit trail, and a feedback system, improving ride coordination by 30%.
- **Leveraged Kotlin**, **XML**, and **Firebase** (Auth, Realtime DB) to develop a scalable platform that handled over 100 simultaneous ride requests, with zero downtime.

People Entry/Exit Detector | *Self Project* **April 2024 - June 2024**

- **Developed** a real-time people counting system for stores and malls, accurately tracking over 500 entries/exits per hour.
- **Optimized performance** by 25% through threading, ensuring real-time operation for high-traffic areas using computer vision techniques.
- **Achieved** 95% accuracy in detection using **OpenCV**, **MobileNetSSD**, and **CNN**.

Movie Recommender System | *Course Project under Dr. Anand Mishra* **January 2024 - March 2024**

- **Built** a personalized movie recommendation engine using **KNN**, **collaborative filtering**, and **SVR**, increasing prediction accuracy by 15% for over 1,000 active users.
- **Enhanced** user engagement by 20% through improvements to the **front-end** and detailed project description page.
- **Leveraged Python (NumPy, Pandas)**, **SKLearn**, and **TensorFlow** to develop and deploy the recommendation engine.

Technical Skills

Languages: C/C++, Python, R, HTML/CSS, JavaScript, SQL, Kotlin, XML
Developer Tools: VS Code, PyCharm, MATLAB, Firebase, Android Studio, R-Studio
Technologies/Frameworks: Linux(Ubuntu), Git, Github, Scikit-Learn, OpenCV, Numpy, Pandas, Scipy, Matplotlib

Achievements

- Department Rank 1 in B.Tech CS+EE
- Got 3rd Prize(Project Demonstration) in Industry Day-2024@IITJ.
- Part of IITJ Team in ISRO-URC 24
- Specialist@CodeForces(Rating-1535)

Positions of Responsibility

- Development Head @ Akshar IITJ
- Executive @ ES Board of Departmental Societies
- Member @ Quiz Society IITJ