

MOHIT KUMAR

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EDUCATION

Indian Institute of Technology, Jodhpur

B.Tech - Computer Science and Engineering

Nov 2022 – Jul 2026

Jodhpur, Rajasthan

TECHNICAL SKILLS

Languages: Java, Kotlin, C++, Python, MySQL, Data Structures, Algorithms

Technologies/Frameworks: Spring Boot, Firebase, Jetpack Compose, Flutter, PostgreSQL, WebSockets, Docker, Linux/UNIX environments, Relational Databases

Tools: Postman, Github, Android Studio, IntelliJ, VS Code, Linux

EXPERIENCE

Undergraduate Researcher

Jun 2025 - Jul 2025

Indian Institute of Technology, Jodhpur

IIT Jodhpur

- Co-authored a research paper on the implementation of **advanced federated learning methods** (FedPer, FedRep, ClusterFL, and the novel FedMeet), applied to meeting client sensor data; FedMeet achieved **85% accuracy**, surpassing existing approaches in activity recognition.
- Developed a **meeting engagement recognition system** using an IMU-driven ONNX-converted XGBoost model, achieving a cross-validation accuracy of $91.19\% \pm 1.22$. Integrated the model into a backend with a greedy update algorithm to optimize client-server communication, track focus, and provide productivity feedback via LLMs; findings communicated in a research paper.

PROJECTS

CloudVault | [Github](#) | Spring Boot, React (Vite), Google Cloud, Firebase

Mar 2025 – Apr 2025

- Engineered a **secure cloud storage platform**, integrating **Google Cloud Storage** for scalable file handling and **Firebase Authentication** for user access control.
- Integrated **real-time database synchronization** with Firebase Realtime Database, achieving **99.9% consistency** in updates and enabling collaborative file sharing.
- Optimized backend with **Spring Boot**, delivering **low-latency file uploads (<500ms)** and sustaining high throughput under load testing.

Spring Email-Scheduler App | [Github](#) | Spring Boot, Quartz Scheduler

Sep 2024 - Aug 2024

- Built a **timezone-aware email scheduling system** using **Spring Boot** and **Quartz Scheduler**, supporting automated reminders and notifications.
- Enhanced scheduling reliability by designing workflows to handle **50+ concurrent jobs** with minimal execution delay and high fault tolerance, validated through load testing.

SensorFlow-Model | [Github](#) | Federated Learning, Flower, Python, ML Models

Jun 2025 – Jul 2025

- Benchmarked multiple **federated optimization strategies** — FedPer, FedRep, ClusterFL, and novel FedMeet — on multi-sensor IMU data to classify 12 fine-grained meeting activities from 8 participants.
- Achieved **87.97% test accuracy** with FedMeet within 20 rounds, outperforming baselines (FedPer 53.89%, FedProx 66.54%, ClusterFL 71.48%).
- Enhanced personalization accuracy from **75.0% (global model)** to **92.39%** with few-shot local adaptation ($K=20$).
- Conducted experiments with the **Flower framework**, validating scalability, communication efficiency, and privacy-preserving aggregation with **97.1% final accuracy**.

COURSEWORK

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|---------------------|-------------------------|--------------------------------|
| • Data Structures | • Software Engineering | • Computer Networks |
| • Machine Learning | • Computer Architecture | • Distributed Database Systems |
| • Operating Systems | • Cyber Security | |
| • DBMS | • Cloud Computing | |

PUBLICATIONS

- Federated Learning for Meeting Client Sensor Data – introduced **FedMeet**, achieving **85% accuracy**, outperforming FedPer, FedRep, and ClusterFL.
- Meeting Engagement Recognition in Meetings – developed **ONNX-XGBoost** model with $91.19\% \pm 1.22$ cross-validation accuracy using IMU data and greedy update optimization.

ACHIEVEMENTS

- Successfully qualified **JEE Advanced 2022** and **JEE Mains 2022**, among India's most competitive national-level examinations.