

Mmukul Khedekar

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Education

Indian Institute of Technology, Roorkee (IIT Roorkee)

Oct 2022 – May 2026

B. Tech in Computer Science and Engineering

- CGPA: 8.47 / 10.0
- **Coursework:** Computer Networks, Operating Systems, Compiler Design, Computer Architecture, System Softwares, Machine Learning

Experience

Summer Analyst, Goldman Sachs

Bengaluru, India

Trading Blotter Enhancement

May 2025 – Aug 2025

- Constructed Materialized Mongo Views using Aggregation Queries and Optimized them.
- Refactored API Endpoints using Spring Boot Web.
- Designed and Implemented Server-Side DB-level Filtering using Spring Data MongoDB.
- Unit and Integration Tests for Backend using JUnit5 and Mockito framework.
- Implemented Live Polling to the Trading Blotter UI using React.js and Redux Toolkit.

Cloud Security Intern

Remote

CloudDefense.AI

Nov 2024 – Feb 2025

- Implemented GCP Compute Engine Scanner using OSLogin in Python.
- Researched detection of Container Runtime Vulnerabilities using OSQuery.

Achievements

Secured All-India Rank 387 among 150,000 students in JEE Advanced 2022.
Secured All-India Rank 213 among 900,000 students in JEE Mains 2022 (99.98% percentile).
Secured All-India Rank 383 among 150,000 students in KVPY SX 2022.
Selected for IMO Training Camp (IMOTC 2020). Ranked among the top 30 students nationwide in INMO 2020.
Capture The Flag Competitions with InfoSecIITR, which is consistently ranked as #2 CTF Team in India.
Max. Rating: 1788 on Codeforces (Expert, Handle: ssravs).
Max. Rating: 2187 on Codechef (5-star, Handle: ssravs).

Projects

Post-Quantum Secure Email Signatures

Jan 2025 - May 2025

- Implemented Post-Quantum Email Signing by integrating CRYSTALS-Dilithium into DKIM Signatures.
- Built Custom Mailing Clients, DNS Server and SMTP Client and Server that use Secure Email Signatures in Python and Flask, to send and receive emails.

Image to E-Commerce Listing

Jan 2025 - April 2025

- Built an ML-powered product listing tool that generates e-commerce listings from product images.
- Used FastAPI and Next.js with SAM for image segmentation, BLIP for description generation and ViT for product classification.

Toy C Compiler

Jan 2025 - April 2025

- Built a toy C Compiler in Python that compiles basic C11 features such as C11 data types and operators, control flow statements and loops, printf and scanf, pointers and arrays.
- Used PLY to write a tokeniser and parser, implemented the 3AC IR and mapped it to x86-64 assembly.

ChainSeek: StackTooDeep Blockchain Hackathon Project

Jan 2025 - Feb 2025

- Built a decentralized insurance platform using a BERT-based NLP model to assess smart contract vulnerabilities and dynamically assign insurance premiums.
- Deployed Ethereum smart contracts on Sepolia Testnet with automated exploit detection and payout logic, integrated with a full-stack pipeline (Python ML backend, Hardhat, Express.js & Next.js)

Coll-IDE: Online Collaborative IDE for Competitive Programming

Feb 2024 - April 2024

- Built a collaborative coding environment designed for competitive programming and hackathons.
- Utilizes React.js for the frontend, Socket.IO for real-time collaboration, MongoDB for database management and Express.js for the backend.
- Features real-time code editing, integrated test case fetching from Codeforces, direct submission capabilities and a collaborative whiteboard for brainstorming.

SIC/XE Assembler with Program Blocks

Feb 2024 - April 2024

- Two Pass Assembler for SIC/XE (Simplified Instruction Computer) that converts Assembly Code to Machine Code and has additional support for features like Literals, Expressions, Program Blocks, etc. Implemented in C++.

Crypto Paper Trader

Aug 2023 - Nov 2023

- A Web Application designed to provide a risk-free environment where traders can test out their trading strategies and analyze market trends without risking real capital for Cryptocurrency Trading.
- UI written using React.js & Tailwind CSS and Backend using the Django REST Framework.

Technologies

Languages: C, C++, Python, Java, Javascript, SQL

Technologies: MongoDB, Flask, Django REST framework, Fast API, Spring Boot Web, Spring Data MongoDB, Junit5, Mockito, React.js, Redux Toolkit, Express.js, Next.js & Tailwind CSS

Extra-Curricular

InfoSecIITR

March 2023 - Present

A Students Club Group of Cyber-Security Enthusiasts

- Recruited to the Club in March, 2023.
- Selected in the Core Team of InfoSecIITR in June, 2023.
- Promoted to the position of **Additional Technical Secretary** in May, 2025.

Programming & Algorithms

March 2023 - Present

A Club Group for Competitive Programming

- Recruited to the club in March, 2023.
- Became a permanent member of the club in October, 2023.