



Rahul Kumar
Systems & Control Engineering
Indian Institute of Technology Bombay

25M2015
M.Tech.
Gender: Male
DOB: 16/12/2002

Examination	University	Institute	Year	CPI / % Credits
Post Graduation	IIT Bombay	IIT Bombay	2027	null Core: Total:
Graduation	Nagaland University	School of Engineering and Technology	2025	9.62
Intermediate	NBSE	Don Bosco Hr. Sec. School	2021	84.60%
Matriculation	NBSE	Bayavu Hill High School	2019	88.83%

ACHIEVEMENTS & COMPETITIONS

- Institute Gold Medal:** Conferred Institute Gold Medal for Academic Excellence in B.Tech Computer Science & Engineering, Nagaland University [March 2026]
- Winner (1st Place):** Clinched 1st place in Code Chef Competitive Programming Competition during TechAura Fest, School of Engineering & Technology, Nagaland University [Nov 2023]
- Runner-Up (2nd Place):** Secured 2nd place in Code War Algorithmic Challenge during TechAura Fest, School of Engineering & Technology, Nagaland University [Nov 2022]

KEY PROJECTS

Solana-Powered Peer-to-Peer Energy Trading System | B.Tech Thesis Project [Jun 2024 – Jun 2025]

Guide: Dr. Chenlep Yakha Konyak | Department of Computer Science & Engineering, Nagaland University

- Architected a hybrid real-time P2P energy trading platform linking **ESP32** nodes to **Central server** via WebSockets
- Interfaced **INA219** current sensors with relay-controlled loads, enabling automated metering at **>90% efficiency**
- Integrated SPL token payments via **Phantom Wallet** on Solana Devnet, achieving settlement in **2–3s**
- Engineered fault-tolerant local buffering on ESP32 to persist telemetry across network disruptions
- Fabricated two hardware node prototypes demonstrating autonomous energy transfer upon on-chain verification

TechAura Official Web Platform & Event Portal | Self-Project

[Nov 2023 – Feb 2025]

Tech Stack: Python, Flask, JavaScript, HTML5, CSS3, Google Cloud Platform (GCP)

- Developed and maintained the official festival portal on **GCP App Engine**, serving **300+ attendees**
- Programmed server-side rendering with **Flask** and Jinja2, handling dynamic registrations with input validation
- Maintained continuous platform stability during the multi-day festival, inspecting application logs and hotfixing reported issues

EduRAG: Agentic Course Intelligence & QA Engine | Self-Project

[2026]

Tech Stack: Python, FastAPI, Streamlit, LangChain, ChromaDB, BM25, Docker, Multi-Agent Workflows

- Engineered agentic RAG platform with **FastAPI** and **Streamlit**, ingesting course materials (PDF, PPT, DOCX) into vector store
- Implemented hybrid retrieval combining **ChromaDB** with **BM25** and cross-encoder reranking
- Orchestrated a multi-agent system in **LangChain** coordinating specialized Router, Retriever, Reasoning, Math Solver, and Citation agents for modular query execution
- Built quiz generation agent producing MCQs anchored to source chunks, with **Ragas**-based evaluation

Comparative Study of SVM Kernels & Multiple Kernel Learning | Group Course Project

[Autumn 2025]

Course: CS725: Foundations of Machine Learning | Guide: Prof. Abir De | Department of Computer Science & Engineering

- Benchmarked Linear, Polynomial, and RBF kernels on 581k-sample, 7-class Forest Cover dataset with stratified sampling
- Analyzed decision boundary complexity and generalization trade-offs across sparse categorical and continuous features
- Formulated **SimpleMKL** with simplex constraints via dual problem to learn optimal convex kernel combinations
- Attained **87.20% test accuracy**, outperforming single-kernel baselines via 5-fold cross-validation

Physics-Informed Neural Networks for Dynamical Systems | M.Tech Seminar Project

[Spring 2025]

Guide: Prof. Vivek Natarajan | Centre for Systems and Control, IIT Bombay

- Implemented PINNs in PyTorch, embedding ODE governing equations into the loss for data-free prediction
- Constructed composite loss combining physical ODE residuals and boundary penalties
- Modeled spring-mass-damper dynamics via higher-order PyTorch autograd over 300 collocation points
- Benchmarked against RK45 numerical baselines, attaining optimal L_2 error of 2.30×10^{-4}

PUBLICATIONS

*Under Review

C. Y. Konyak, Rahul Kumar, M. Ozukum, R. Singh, and S. Hazarika, "Solana Powered Peer-to-Peer Energy Trading System," in *Proc. 4th Int. Conf. on Machine Intelligence for Research & Innovations (MAiTRI 2026)*, Springer Nature, May 2026

POSITIONS OF RESPONSIBILITY

Finance Secretary | *Student Union (SETSU), Nagaland University*

[Sept 2023 – Dec 2024]

- Administered university-allocated budgets and prepared financial proposals for college-wide festivals serving 300+ students
- Led a 19-member organizing committee, coordinating end-to-end execution across venue procurement, vendor contracts, and logistics
- Managed procurement for event collateral (banners, merchandise, print materials), negotiating vendor contracts within budget
- Served as primary liaison between university administration and student body, resolving grievances and policy issues

Assistant Finance Secretary | *Student Union (SETSU), Nagaland University*

[Sept 2022 – Sept 2023]

- Supported budget allocation and maintained audit records for campus events, ensuring transparent fund tracking
- Coordinated on-ground logistics and vendor outreach across 4 major campus events including Freshers' Meet, Cultural Day, Sports Meet, and Farewell
- Designed official event collateral and managed end-to-end print procurement, from design briefs through vendor delivery

Assistant Web Developer & Organizing Member | *TechAura Fest, SET-NU*

[Nov 2023 – Feb 2024]

- Developed and maintained the official TechAura web platform handling registrations and live event updates for 300+ attendees
- Coordinated with the core organizing committee to conduct technical competitions, manage event scheduling, and facilitate smooth event operations

RELEVANT COURSEWORK

*Ongoing

IIT Bombay

- CS 725: Foundations of Machine Learning
- CS 728: Organization of Web Information
- CS 6012: Deep Learning: Foundations and Applications*
- IE 624: Generative and Agentic AI*

SET-Nagaland University

- CSB302: Data Structures & Algorithm
- CSB503: Database Management Systems
- CSB502: Operating System
- CSB301: Object Oriented Programming

TECHNICAL SKILLS

Languages: C, C++, Python, SQL, JavaScript, Bash

Frameworks & Libraries: React, Flask, PyTorch, Scikit-learn

AI & Agentic Systems: LLM Agents, Model Context Protocol (MCP), RAG, AI Dev Tools

Tools & Platforms: Git, Linux, Claude Code, Codex, Antigravity CLI, Docker, Google Cloud Platform (GCP)

CERTIFICATIONS

- Introduction to Model Context Protocol** | Anthropic [2026]
- Introduction to Subagents** | Anthropic [2026]
- Introduction to Agent Skills** | Anthropic [2026]
- Claude Code in Action** | Anthropic [2026]
- Claude Code 101** | Anthropic [2026]
- AI Fluency: Framework & Foundations** | Anthropic [2026]
- Python with Machine Learning** | Tool Room & Training Centre (TRTC Guwahati), Ministry of MSME [2024]
- Full Stack Web Developer** | National Institute of Electronics & IT (NIELIT Kohima), MeitY [2023]

EXTRA-CURRICULAR ACTIVITIES & HOBBIES

- Completed an intensive 8-week DSA Bootcamp organized by Web and Coding Club, IIT Bombay
- Won 1st place in Carrom Singles and 2nd place in Cricket at Annual Sports Meet, SET-Nagaland University
- Avid Formula 1 enthusiast, actively following Grand Prix race strategies and championship standings
- Enjoy playing table tennis and badminton recreationally
- Actively learning drumming as a musical pursuit