




HRITIK RAJ CHANDA

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EDUCATION

M.Sc. Mathematics & B.E. Electronics and Communications, *BITS Pilani, Hyderabad* Expected - 2025
Coursework: Communication Networks, Digital Signal Processing, Digital Design, Microprocessors, Optimization, Graphs, Number Theory, Algebra, Game Theory, : **CGPA: 8.6**

Minor in Computing and Intelligence, *BITS Pilani, Hyderabad* Expected - 2025
Coursework: Operating Systems, Data Structures, Database Systems, Object-Oriented Programming, Blockchain, Machine Learning, Cryptography, : **CGPA: 8.3**

TECHNICAL SKILLS

Languages	Java, python, SQL, C, C++, HTML/CSS, Solidity, React, Golang, JSON
Tools & Frameworks	SpringBoot, Git, Matlab, Docker
ML Stack	LLM's, GAN, LLaMa, RAG

EXPERIENCE

Undergraduate Student Researcher, (*Research projects - Cryptography, LLMs, GANs*)
BITS Pilani, Hyderabad

- **Retrieval Augmented Conversational Research specific AI** (*Prof. Mohan S C*) Jan 2024 - April 2024
 - Composed an AI tool for composing civil engineering research papers.
 - Enhanced LLaMa 2 (7-billion parameter Language Model) by fine-tuning on selected research papers, boosting its domain specificity and output quality by 40% through Langchain and RAG frameworks utilization.
 - Advanced the development of a retrieval system to identify and extract critical document segments efficiently.
- **Applying Transfer Learning using GANs for NoC Routing** (*Research Paper*) (*Prof. Soumya*) Jan 2024 - April 2024
 - Proposed a reinforcement learning algorithm for routing optimization in mesh $m \times n$ network-on-chip (NoC) topologies.
 - Used Generative Adversarial Networks (GANs) to create synthetic network conditions for training the reinforcement model.
 - Applied transfer learning to adapt models to different NoC layouts, enhancing their performance and adaptability.
- **Developing Chaos based Image encryption using Generalized Heat Equation** *first author* (*Research Paper*) (*Prof. Manish Kumar*) Jan 2023 - Jan 2024
 - Created an encryption algorithm for medical images, meeting NIST standards and performance metrics like NPCR and UACI.
 - Incorporated the generalized heat equation for random key generation and chaotic maps for image data scrambling.
 - Investigated selective encryption for regions of interest in medical images.

Summer Intern, (*Cargo team - Golang, JSON Parsing*) June 2022 - August 2022
Goavega Software India Pvt Ltd. (*Certificate*) *Bangalore, KT*

- Developed Golang-based applications for cloud deployment, achieving a 40% reduction in server response time and a 25% increase in network throughput.
- Designed a feature to reformat client data into a structured format.
- Implemented efficient JSON file parsing.

PROJECTS

Buying & Selling Bidding WebApp - Just BIDDIT! (*Github Link*)

- In my recent project, 'JustBiddit', Launched a dynamic buying and selling application that revolutionized the online bidding experience within the BITSians community.
- Leveraging **Java**(SpringBoot) for the backend and **JSP** for the front end, and led a robust and user-friendly platform. This application is underpinned by a MySQL Workbench database, ensuring efficient data management and security.

Air Traffic Management - Operating System (*Github Link*)

- Devised a system simulated with processes like plane, airport, air traffic controller and cleanup. Implemented mutex locks to avoid deadlocking between the processes.
- Leveraging concepts like Message queues between the processes to communicate with the usage of pipes between plane and passenger.

AI Chatbot - Natural Language Processing (*Github Link*)

- Introduced a messenger bot with a knowledgebase for multiple random user-bot interactions.
- Stored conversations in a database/knowledge base.
- Utilized Artificial Intelligence Markup Language (AIML) for core chatbot functionality.

SVM analysis on Gender recognition by voice - Machine Learning ([Github Link](#))

- Analyzed voice frequency signals from males (1584) and females (1584).
- Applied SVM analysis using different kernels with default hyperparameters.
- Determined optimal hyperparameters for kernels like linear, polynomial, and Radial Basis function.

ACCOMPLISHMENTS

Teaching Assistant - BITS Pilani

- Associated with BITS F464 **Machine Learning** course.
- Responsible for preparing reading material and weekly lab materials for different supervised models.
- Clarified the students' doubts and provided feedback on their work on a weekly basis through doubt sessions.

Competitive coding Rating

- [Codeforces](#) *Peak-Rating: 1130*
- [Codechef](#) **3-star** Coder *Rating: 1602*
- Gold at IIT Khanpur's UDGHOSH'22 (10/2022)
[Ultimate Frisbee](#)

SCHOLARSHIPS

Merit Cum Need Scholarship

Received 40% scholarship on college fees for semesters (2021-24), for being among top 10% students in the entire batch.

VOLUNTEER EXPERIENCE

NSS Volunteer

Oct 2021-Dec 2022

Mentored and took classes for rural kids during summer break. Visited old age homes, interacted with its residents, distributed food and celebrated Grandparents' Day with them.