Ajay Kumar Ray

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EDUCATION

Central University Of Jammu **2022 - 2026**
B.Tech - Electronics and Communication Engineering ***CGPA : 8.79(current)*** *Jammu, J&K*

Jagdish Nandan College (BSEB) **2019 - 2021**
12th Standard ***Percentage : 75.8%*** *Madhubani, Bihar*

MKU Vidyalaya , Mangrauni (BSEB) **2018 - 2019**
10th Standard ***Percentage : 63.4%*** *Madhubani, Bihar*

RELEVANT COURSEWORK

- Data Structures
- Computer Networks
- Web Development
- Algorithms Analysis
- Artificial Intelligence
- Block Chain
- Digital Electronics
- DBMS
- Oops Concepts
- Internet Of Things
- Cyber Physical System
- VLSI

EXPERIENCE

IISF 2024 Hackathon Finalist **Nov 29 - Dec 3 , 2024**
Role - AI Model Developer & Researcher *IIT Guwahati, Assam*

- Finalist, IISF Hackathon 2024 – Indian International Science Festival (IISF), IIT Guwahati.
- Worked on "Generative AI models for cloud replacement in satellite images".
- Developed AI-based techniques to enhance satellite imagery by removing cloud obstructions.
- Implemented deep learning models for image reconstruction and enhancement.
- Collaborated in a team-based problem-solving environment under real-world constraintst.

SCL Mohali Industrial Visit **Nov 2024**
Role - Software & VLSI Enthusiast *Mohali, Punjab*

- Explored EDA (Electronic Design Automation) tools used in IC design and semiconductor manufacturing.
- Gained insights into FPGA programming, ASIC design flow, and RTL simulation.
- Observed software-driven process control and automation in semiconductor fabrication.
- Learned about CAD tools for VLSI design and their role in chip prototyping.
- Engaged with industry experts to understand the intersection of software and hardware in semiconductor technology.

Finalist, Strategy Showdown - E-Summit'25, IIT Roorkee **Jan 31 - Feb 2 , 2025**
Role - Strategy & AI-driven Market Analyst *IIT Roorkee , Uttarakhand*

- Developed a Go-To-Market (GTM) strategy for Intelliswitch using AI and data analytics.
- Conducted market research and applied advanced analytical techniques for business scaling.
- Participated in the Startup Expo and entrepreneur lectures, gaining insights into tech-driven business growth.
- Collaborated with a team to solve real-world business challenges in a high-pressure competition.

Workshop on Data Mining Techniques (IIT Roorkee) **April 2024 - May 2024**
Role - Workshop Attendee *Remote*

- Applied classification algorithms (e.g., Decision Trees, SVM) and clustering techniques (K-means, DBSCAN) to analyze large-scale urban datasets, identifying patterns for traffic congestion reduction and energy consumption optimization.
- Engineered predictive models using Python and Scikit-learn to forecast traffic flow in smart cities, improving simulated route efficiency by 25% through data-driven insights.
- Processed and visualized real-world sensor data (e.g., traffic volume, public transit usage) with Pandas and Matplotlib, enabling actionable recommendations for city planners.
- Conducted exploratory data analysis (EDA) to identify patterns, outliers, and correlations, delivering actionable recommendations that informed strategic initiatives.

PROJECTS

All India Model Rocketry Competition (ISRO)

- Selected and qualified for the prestigious national-level rocketry competition organized by ISRO and IN-SPACe.
- Designed and implemented a ejected 1 kg payload deployment system at 1000m altitude..
- Developed and optimized parachute-based recovery mechanisms for safe descent.
- Ensured structural integrity and aerodynamic stability during payload ejection.
- Conducted simulations and real-world testing to validate deployment and recovery efficiency.

Task Management Dashboard

- User Authentication - Login/Signup using Firebase or JWT
- Task Creation Management - Users can add, edit, delete, and categorize tasks
- Drag & Drop Task Board - Kanban-style board for organizing tasks (To-Do, In Progress, Completed).
- Due Date Reminders - Notify users of upcoming deadlines.
- Responsive Design - Works on all devices.
- Tech Stack: HTML, CSS, JavaScript (React/Next.js), Firebase/Node.js (for backend), Tailwind CSS for styling

Intrusion Detection System (IDS) Using Machine Learning

- Developed a Machine Learning-based Intrusion Detection System to identify and classify network intrusions in real-time. The system analyzes network traffic patterns to detect malicious activities such as DDoS attacks, port scanning, and unauthorized access.
- Preprocessed and analyzed network traffic data (e.g., NSL-KDD or CICIDS datasets).
- Achieved high accuracy in identifying and classifying intrusions.
- **Technologies Used :** Python, Scikit-learn, TensorFlow/Keras, Pandas, NumPy, Matplotlib/Seaborn

TECHNICAL SKILLS

Languages: Python, C++, JavaScript, SQL
Machine Learning: Pandas, NumPy, Matplotlib, Seaborn,TensorFlow, PyTorch
Technologies/Frameworks: HTML5, CSS3, React, MongoDB, MySQL, Express, Node.JS, Javascript, Bootstrap, Tailwind CSS
Tools and Frameworks: VS Code, Git, GitHub, Canva

EXTRACURRICULAR

- **President, Electronics and Robotics Club** - Organized technical competitions and mentoring sessions.
- **IEEE Student Member -** Engaged in research discussions and professional networking.
- **Commentator, Inter -College Cricket Match -** Provided live match commentary.
- **Organized an event for juniors -** Conducted engaging technical activities and competitions for first and second-year students.