Akshay Ku Bothra

Major in Civil Engineering

Specialization in Engineering Entrepreneurship

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EDUCATION

Indian Institute of Technology, Kharagpur Dec 2020 – May 2025
B.Tech in Civil Engineering & Dual Degree in Engineering Entrepreneurship - **CGPA: 8.11** Kharagpur, India

WORK EXPERIENCE

Cambridge Technology Enterprises | Full Stack Trainee Engineer, Hyderabad June 2025 - Aug 2025
- Built a resource tracker with **Angular** and **Kendo UI**, featuring role-based dashboards, grids, charts and spreadsheets for audits
- Developed **ASP.NET Core (C#)** backend with 3-tier architecture, JWT auth, role-based access, Serilog logging, and error handling
- Optimized SQL Server schema with normalized tables, stored procedures and TVPs, enabling fast dropdowns, and Excel/CSV bulk imports
- Deployed apps on **Vercel** (frontend) and **Azure** App Service + SQL DB, with technical docs ensuring seamless handover and maintenance

Renergy Technologies | Software Engineering Intern May 2024 - July 2024
- Automated website testing by scripting in **Playwright** framework, validated **200+** UI components, and ensured website's functionality
- Engineered data extraction and comparison script using **Lodash** and **Node.js**, achieved **98%** accuracy in verifying critical web elements
- Boosted testing efficiency by **80%** by refined testing framework with custom file operations, timeout adjustments, and error handling

Hindalco Industries Limited | Data Science Intern Feb 2024 - May 2024
- Developed a **predictive maintenance model** to optimize machine efficiency and minimize downtime in window manufacturing process
- Executed advanced **EDA** on 27 features using **Pandas/Plotly**, generated actionable insights to optimize **100+ CNC machines**
- Implemented **7-day backward fill** for failure labels, created a predictive window that improved the model's real-world maintenance use
- Leveraged **XGBoost** and **CatBoost**, achieved **93.28%** accuracy with hyperparameter **fine-tuning** with ensured consistent performance

IIM Bangalore | Data Science Intern Dec 2023 - Jan 2024
- Preprocessed abstract dataset using **NLTK**, resolved **95%** of data issues, and created a **RoBERTa**-based **Q/A** model with HuggingFace
- Utilized **TextBlob** for sentiment analysis and **Pytrends** for trend analysis, generated insights on search trends across 29 Indian states
- Produced a highly accurate Q/A model with improved **Cosine Similarity** to **0.7**, contributed to high-quality and impactful patent

PUBLICATIONS

CTRG 2025 | IIT Guwahati
- **Bothra, A. K.**, Pramanik, S., Ganguly, S., & Maitra, B. (2025). Analysis and Modelling of Road Crash Injuries for Different Road Categories and Environments: A Case Study of West Bengal, India. Accepted for presentation at **8th CTRG 2025, IIT Guwahati;** to be published in **Scopus Indexed Proceedings.**

COMPETITION

Smart India Hackathon 2023 | Ministry Of Coal Oct 2023 - Dec 2023
- Designed a **telematics** solution for vehicles with ECU, a cloud server, and a **dashboard**, resulted in fleet optimization and cost reduction
- Transformed sensor data into **InfluxDB** database and crafted **Grafana** dashboards, enhanced real-time monitoring efficiency by **40%**
- Ranked among the **top 5** nationwide out of 100+ teams, for the **SIH'23** finale held at the National Institute of Engineering, Mysore

PROJECTS

Master's Thesis Project | Prof. Mrigank Sharad, IIT Kharagpur Aug 2024 - April 2025
- Led development of an **Edtech** platform for seamless student-teacher interaction, leveraging **React**, **FastAPI**, and **MongoDB** stack
- Engineered clustering mechanism using **BERTopic** to group semantically similar queries, enhanced response efficiency by **30%**
- Merged **85%** of student queries using **NLP** with sci-kit-learn and integrated an **OpenCV**-based automated attendance tracking system
- Programmed computer vision based real-time system **(OpenCV, EasyOCR)** for MCQ detection from answer sheets in 40+ students class

SKILLS AND EXPERTISE

Languages : Python | C++ | SQL | C# | Java
Development : HTML | CSS | Javascript | Angular | ASP.NET Core
Data : Seaborn | Matplotlib | Numpy | scikit-learn | Excel | Azure | Git | Github | TensorFlow | Keras | OpenCV | NLTK | Pytorch | Statsmodels | Docker | Grafana | FastAPI | Flask

RELEVANT COURSES

Programming, Data Structure and Algorithms | Statistics for AI-ML | Probability and Statistics | Linear Algebra | Machine Learning using Python | Data Analysis with Python | Artificial Intelligence Foundations and Applications | Improving Deep Neural Network | Neural Network and Deep Learning