

# Kavya Rai

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## EDUCATION

Indian Institute Of Technology, Kharagpur

B.Tech in Computer Science and Engineering

GN National Public School

12th Grade

Little Flower School

10th Grade

Kharagpur, West Bengal

2023 - 2027, CGPA: 7

Gorakhpur, Uttar Pradesh

2022, Percentage: 93%

Gorakhpur, Uttar Pradesh

2020, Percentage: 92%

## INTERNSHIPS

Research Intern | Prof. Pabitra Mitra | IIT Kharagpur

May 2026 – Present

- Architected a **Python & JavaScript Web-GIS** application to model disease outbreak footprints
- Implemented a **Monotone Chain convex hull** algorithm for real-time infection boundary estimation
- Engineered an interactive **Leaflet.js & OpenStreetMap** UI for dynamic polygon recalculation
- Automated pipelines processing raw epidemiological data into render-ready **GeoJSON**

## PROJECTS

- **OutbreakIQ | Gemma 4 Impact Challenge** May 2026  
(**AI-powered GIS disease intelligence platform** with real-time analytics)
  - Launched a full-stack GIS platform on Vercel/Render using **React, Node.js, MongoDB, & Leaflet**
  - Integrated **Gemma AI** for a context-aware chat assistant, processing 28+ global outbreak datasets
  - Engineered a **Recharts** dashboard visualizing 4 key epidemiological trends & global outbreak hotspots
  - Secured admin operations via **JWT** with role-based access, supporting voice queries & PDF generation
- **SyncSpace | Women Engineers (WE) Program** Feb 2026 – Mar 2026  
(**Real-time collaborative workspace** with shared notes, chat, and presence tracking)
  - Architected a full-stack platform on Netlify/Render using **React(TS), Node.js, & MongoDB**
  - Orchestrated low-latency sync via **Socket.io**, managing 8 discrete events for live chat & presence
  - Reduced database load during high-frequency concurrent edits via **700ms debounced autosave**
  - Designed secure workspaces with **JWT** access control, ownership transfers, & PDF exports
- **DataSpeak | Code for Purpose 2026** Apr 2026  
(**Deterministic CSV “talk-to-data” system** with natural language querying)
  - Built a natural language CSV query platform using **React, Node.js, Chart.js, & Groq API**
  - Programmed a deterministic engine processing 100% of math to prevent **LLM** hallucinations
  - Integrated an intent classifier & **Llama-3.1** to explain pre-computed metrics in plain English
  - Implemented numeric guardrails, confidence badges, & caching to ensure strict data accuracy
- **TweetNLP | IIT Kharagpur** Mar 2026  
(**Deep learning sentiment classifier** using LSTM architectures)
  - Developed a from-scratch sentiment classifier using **PyTorch, LSTM, & BiLSTM + attention**
  - Enhanced parsing of noisy social media text via attention mechanisms & dropout regularization
  - Evaluated 59k tweets to achieve 63% accuracy, utilizing **Macro F1-score** & confusion matrices
  - Analyzed class imbalance across 3 metrics, identifying the neutral class as a decision boundary
- **QuickPoll | IIT Kharagpur** Mar 2025 – Apr 2025  
(**Real-time polling platform** with live vote aggregation and authentication)
  - Published a full-stack polling platform on Vercel/Render using **React, Node.js, & MongoDB**
  - Engineered live vote aggregation via **Socket.IO** to process and display concurrent real-time updates
  - Secured user authentication & protected API routes utilizing **JWT & bcrypt** encryption
  - Designed a responsive **Tailwind CSS** UI for custom poll creation, dynamic results, & search

## TECHNICAL SKILLS

- **Programming & Databases:** C/C++, Python, SQL, MongoDB, PostgreSQL, JavaScript, Java
- **Web & Frameworks:** React, Node.js, Express.js, TailwindCSS, Socket.io, JWT, REST APIs
- **Libraries & Tools:** Pandas, NumPy, Matplotlib, Git, Linux, VS Code, Jupyter, LaTeX

## ACHIEVEMENTS

- Selected as a **WE Scholar 2024** by TalentSprint & Google, among the **top 200** of **30,000+** applicants
- Awarded the **NTSE Scholarship** in **2020** by NCERT among **1.2 million** candidates
- Selected as one of the **Top 50 teams** in **Code for Purpose 2026** by **NatWest** among **2000+** teams