

SACHIN KUMAR

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ACADEMIC DETAILS

B Tech (ECE Engineering)	2022-2026	MMMUT, Gorakhpur	8.18/10.0
Class XII (CBSE)	2021	Oxford Public School, Muzaffarpur	90.8%
Class X (CBSE)	2019	Ramakrishna Mission Vidyapith, Deoghar	95.8%

PROJECTS

Water Potability Prediction ([LINK](#))

July 2025 –September 2025

- Built a stacking ensemble model (LightGBM, XGBoost, Random Forest + Logistic Regression) to predict water potability.
- Applied SMOTE to handle class imbalance, improving accuracy (0.65) and ROC-AUC (0.67).
- Used SHAP explainability and performance visualizations (ROC, PR, Confusion Matrix) for model interpretation.
- Packaged trained models and imputers for future deployment and real-time predictions.

AI-Powered Voice Assistant for Microsoft Word ([LINK](#))

Python, Hugging Face ASR, Sentence-Transformers, Google Gemini API, win32com

August 2025 –September2025

- Built a desktop-based AI assistant that enables hands-free control of Microsoft Word using voice commands for dictation, formatting, and document management.
- Integrated speech recognition (Wav2Vec2), semantic command matching (MiniLM), and AI text generation (Gemini API) for intelligent and flexible interactions.
- Implemented real-time speech-to-text, dynamic command mapping, and AI-based text generation for topic-specific content creation.
- Achieved seamless Word automation (bold, italic, alignment, undo, delete, etc.) using win32com and python-docx.
- Designed a modular architecture for continuous listening, error fallback, and GPU-accelerated ASR inference (optional CUDA support)

RAG-Based Medical Chatbot ([LINK](#))

FastAPI, LangChain, FAISS, OpenAI GPT

July 2025- September 2025

- Developed a Retrieval-Augmented Generation (RAG) chatbot for medical queries, integrated with a PDF-based medical encyclopedia for accurate, context-aware responses.
- Implemented PDF chunking and embedding storage in a FAISS vector database to enable fast and relevant document retrieval.
- Utilized LangChain memory to maintain user-specific chat history and conversational context.
- Built a FastAPI backend to handle query processing, retrieval, and response generation via OpenAI GPT.
- Designed the system to retrieve top source snippets alongside answers for transparency and reliability.

ACHIEVEMENTS

- GATE CSE 2025 Qualified.
- Internet of things (NPTEL, IIT Kharagpur)- Top 5% course topper, scoring 88% marks.
- Introduction to Machine Learning (NPTEL, IIT Madras) – scored 75% marks.

SKILLS

Technical: C, C++, HTML, TAILWIND CSS, JAVASCRIPT, REACT JS, NODE JS, MONGO DB, Python, Data Structure and Algorithm, DBMS, OOPS, Computer Networks, Operating System, SQL, MySQL, PostgreSQL, NUMPY, PANDAS, MATPLOTLIB, OPENCV, YOLO.

Curriculum: Signal Processing. **Telecommunications,** Microprocessor and Microcontroller coding, Embedded Systems, Analog, Digital Electronics, Control Systems, Cellular Communication, IOT, VLSI.

Certificates: Machine Learning | NPTEL | IIT Madras, IOT | NPTEL | IIT Kharagpur

Interests:

- Machine Learning, Deep Learning, Neural Networks.
- Development in Real life applications, Problem Solving.
- Analytical Problem Solving, Quantitative Aptitude, Logical Reasoning, Data Interpretation.
- Public Speaking, Debates and organizing Events.

POSITION OF RESPONSIBILITY

- JOINT SECRETARY at Sports Sub Council.
 - JOINT SECRETARY at ECES, Departmental Society of ECE
 - Co-Ordinator, ‘AAYAAS’ - The Annual Sports fest of MMMUT, Gorakhpur
- August 2024 – ongoing
- April 2025 - ongoing
- Feb 2024, Feb 2025

