



ANKIT KUMAR

Baccalaureate in Technology (B.Tech.)
Computer Science and Engineering
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EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major: CSE (Current)	Bihar Engineering University, India	9.56	2021-Present
B.Tech. Major: CSE (Cumulative)	Bihar Engineering University, India	9.16	2021-Present
Diploma: Electronics Engineering	State Board of Technical Education, Bihar	9.27	2019-2022
AISSE: Matriculation (10 th)	CBSE Board, New Delhi	97.60%	2019

EXPERIENCE

- Research Intern – Generative AI (Ragamala Imagery)** May 2025 – June 2025
Indian Institute of Technology, Kharagpur (via NPTEL) On-site
 - Fine-tuned **Stable Diffusion XL (SDXL 1.0)** with **LoRA/QLoRA** to generate culturally rooted Ragamala paintings; achieved **31%** gain in stylistic coherence, which was evaluated using **FID, CLIPScore**.
 - Curated a dataset of **2,000+ artworks** with poetic metadata; used **CLIP-guided RAG** to enhance visual-textual alignment.
 - Benchmarked against **DALL-E 3, MidJourney v6**, and **Kandinsky 3.0**; achieved **24%** higher relevance in human evaluations.
- Machine Learning Intern** Dec. 2024 – Jan. 2025
Internshala Trainings, IIT Madras Pravartak, NSDC Remote
 - Built **predictive models** for **housing prices, telecom churn, and disease detection**, improving decision-making.
 - Optimized models with **Linear Regression, Decision Trees, SVM, XGBoost, and Neural Networks** boosting accuracy by **7%**.
 - Refined **feature selection, hyperparameter tuning, and preprocessing**, reducing overfitting & improving efficiency by **15%**.

PROJECTS

- AutoSQL: Text-to-SQL Query Generation** Aug. 2024 – Present
LLM-Powered SQL Generation with RAG [GitHub](#)
 - Fine-tuned a **6.7B deepseek-coder model** with **QLoRA adapters**, boosting SQL query accuracy by **23%** on the **Spider dataset**.
 - Implemented **RAG with FAISS & BM25**, improving query precision by **31%** using **multi-hop retrieval**.
 - Deployed a **FastAPI service** with an interactive SQL editor, reducing inference latency by **15%** via quantization.
- TransLingua: English-To-French Machine Translation** Apr. 2024 - Aug. 2024
End-to-End Transformer Model for Language Translation [GitHub](#)
 - Developed a **Transformer-based model** to translate English to French with **84M+ parameters**, achieving a **BLEU of 29.7**.
 - Preprocessed **250K+ sentence pairs** from the **Tatoeba dataset**, ensuring linguistic diversity and fluency.
 - Built a **React+FastAPI app** with **Firebase authentication**, reducing API response time by **40%**.
- FineTune: LSTM-Based Piano Music Generator** Jan. 2024 - Mar. 2024
AI-Powered Music Composition with LSTMs [GitHub](#)
 - Designed a **3-layer LSTM model** with **512 units per layer**, training on **9,021 MIDI files** to generate piano compositions.
 - Implemented **batch normalization, recurrent dropout, and early stopping**, reducing loss to **0.03** over **200 epochs**.
 - Developed a **MIDI generation pipeline**, enabling AI-composed music in **diverse styles** with smooth transitions.
- Sign-a-Line: Real-Time ASL Recognition** Dec. 2023
AI-Powered Sign Language to Speech [GitHub](#)
 - Engineered a **CNN model** with **3 convolutional layers**, achieving **95% accuracy** in ASL recognition.
 - Optimized inference speed to **15ms per frame** using **TensorFlow, OpenCV, and CUDA acceleration**.
 - Integrated **MediaPipe** for **30% noise reduction** and **gTTS** for real-time speech output.

SKILLS

- Programming Languages:** Python, C, C++, JavaScript, SQL, Bash, Java, Kotlin, MATLAB, HTML/CSS
- AI & ML Frameworks:** PyTorch, TensorFlow, Keras, Scikit-learn, Hugging Face, ONNX, LangChain, LangSmith, LlamaIndex, AutoGen, Semantic Kernel, MLOps, CI/CD Pipeline
- Document & Image Processing:** OpenCV, PyPDF, PyOCR, Tesseract, Pillow
- Vector Search & RAG Ecosystem:** FAISS, Chroma DB, Pinecone, Qdrant, Milvus, Azure AI Search, RAG Pipelines, Embedding Techniques, Prompt Engineering, Agentic AI
- Databases & Backend:** MySQL, PostgreSQL, Firebase, Cosmos DB, FastAPI, Flask, REST APIs, GraphQL
- Cloud & DevOps:** MS Azure (AI Studio, AI Search, Cosmos DB, ML), AWS (EC2, S3, Lambda), Docker, Nginx, Gunicorn, Git/GitHub, DeepStream
- Data Engineering & Automation:** ETL Pipelines, Data Preprocessing, Multimodal Workflow Automation
- Visualization & Analysis:** Power BI, Tableau, Jupyter, Matplotlib, Seaborn
- Operating Systems:** Windows, Linux (Ubuntu, Arch, Debian)
- Soft Skills:** Product Management, Financial Analysis, Consulting, Technical Writing, Team Leadership