

# Samrat Ghosh

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## SKILLS SUMMARY

- **Programming:** Python, Java, C, C++, JavaScript, TypeScript
- **AI/ML & GenAI:** Machine Learning, Deep Learning, NLP, Computer Vision, GenAI, SLMs, RAG, Prompt Engineering
- **Frameworks & Tools:** PyTorch, TensorFlow, Hugging Face, LangChain, FastAPI, MERN Stack, Tailwind CSS, MySQL
- **Automation & Cloud:** AWS / GCP (exposure), RPA (UiPath, Automation Anywhere), Docker, MLOps / DevOps
- **Version Control & Utilities:** Git, GitHub, VS Code, Postman, Jupyter Notebook
- **Soft Skills:** Leadership, Problem-Solving, Teamwork, Communication, Project Management, Adaptability

## PROJECTS

- **ApneaView – Sleep Apnea Detection (AI + Full Stack) | [Live Demo](#)** November 2025
  - Coded an AI-powered healthcare system for detecting sleep apnea using ECG signals with a custom-trained 1D Convolutional Neural Network (CNN) model.
  - Built a FastAPI backend for real-time model inference and integrated it with a React + TypeScript frontend for interactive ECG waveform visualization.
  - Implemented a clinical risk estimator that calculates apnea risk based on user health metrics like BMI, snoring, and blood pressure.
  - Deployed the backend on Render and frontend on Vercel, making it a continuously live platform for real-time sleep apnea screening via web interface.
- **SeedSense - Seed Quality Analyzer (AI + Full Stack) | [Live Demo](#)** May 2025
  - Developed an end-to-end AI system for automated seed quality classification using React(TypeScript) frontend and FastAPI backend.
  - Engineered feature extraction pipelines using color histogram, Laplacian variance, and shape descriptors for quality analysis.
  - Trained and optimized a Random Forest model for multi-class classification with high accuracy.
  - Designed REST APIs for model integration and scalable AI deployment.
- **AI-Powered Travel Planner (GenAI + Agentic System) | [Live Demo](#)** January 2025
  - Built a GenAI-based assistant using Google Gemini API for generating personalized travel itineraries.
  - Integrated LangChain-style pipelines, Hugging Face embeddings, and contextual reasoning for intent-based recommendations.
  - Implemented Copilot-style conversational UI with voice input and real-time itinerary updates.
  - Designed a modular agentic architecture adaptable to domain-specific autonomous travel assistants.

## ACHIEVEMENTS

- **Research on audio-based sleep apnea detection** 2025  
Accepted for presentation and publication at the ICIRDST - 2025
- **Media Club President** 2020 - 2022  
Auxilium Convent School

## CERTIFICATIONS

- Automation Developer Associate Training – ICT Academy April 2025
- Master Course in Artificial Intelligence – Great Learning April 2025
- Cloud Computing - NPTEL December 2024
- Application Development in Java - LPU July 2024

## EDUCATION

- **Lovely Professional University** Phagwara, Punjab  
*Bachelor of Technology - Computer Science and Engineering*  
**Relevant Coursework:** Machine Learning, Data Base Management System, Data Structures and Algorithm, Robotic Process Automation
- **Auxilium Convent School** Barasat, West Bengal  
*Percentage: 66.25%*  
**Relevant Coursework:** Physics, Chemistry, Mathematics, Computer Science
- **Auxilium Convent School** Barasat, West Bengal  
*Percentage: 75.20%*  
**Relevant Coursework:** Physics, Chemistry, Mathematics, Computer Science