

Aniruddha Chattopadhyay

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EDUCATION

Indian Institute of Technology, Kharagpur

B.Tech + M.Tech in Industrial Engineering (Industrial Electronics)

Minor in Computer Science (9.31/10) with Micro specialization in AI (8.74/10)

2017 – 2022

CGPA: 8.66/10.0

EXPERIENCE

Senior ML Engineer | Full Time

Apr. 2025 – Present

PVX Partners

Singapore

- Researching and developing **multimodal AI agents** capable of generating real-time commentary for mobile game ads by interpreting video, audio, and on-screen text signals.
- Leveraging **vision-language models (VLMs)** and **LLMs** in a coordinated agentic framework to describe gameplay events and player actions with contextual flair.
- Designed a **reinforcement-feedback loop** for evaluating commentary quality using engagement and semantic coherence metrics, enabling continuous model refinement.
- Optimizing the agent pipeline for **low-latency, on-device inference**, allowing scalable deployment across diverse ad formats and geographies.

Applied LLM Engineer | Full Time

Mar. 2024 – Apr. 2025

Maxim AI

Bangalore, India

- Developed **LLM-based evaluators** for automated assessment using optimized **Chain-of-Thought prompting** and adaptive **LangChain** callback mechanisms for efficient token utilization.
- Fine-tuned a **LLaMA model** on the **AI4Privacy** dataset integrated with **Presidio**, achieving enhanced detection and anonymization of PII in textual data.
- Authored the **maxim-py SDK**, enabling structured logging and quantitative evaluation of LLM workflows for reproducible AI research.
- Developed autonomous **AI red-teaming agents** using the **Garak** framework to simulate vulnerability assessments in generative AI systems.

Data Scientist | Full Time

Aug. 2022 – Mar. 2024

AB InBev

Bangalore, India

- Researched and deployed **unsupervised clustering models** across six European markets, informing strategic segmentation worth \$2M+.
- Developed **delay-risk prediction models** for US and Canada logistics, improving forecast precision and operational reliability.
- Enhanced existing ML pipelines, achieving a **25% F1-score gain** and demonstrating significant EBITDA uplift.
- Awarded the **Pint Award** for excellence in data science research and impact delivery.

Lead ML Engineer | Volunteer

Nov. 2022 – Present

Turn The Bus, NGO

Remote

- Led research on **multimodal retrieval-augmented generation (RAG)** using ColPali over NCERT textbooks for automated doubt resolution.
- Designed the full **RAG pipeline** and model-serving stack using Flask backends and React/Kotlin interfaces.
- Integrated **OpenEDX** and Django resources to improve educational content accessibility and evaluation workflows.

RESEARCH

- **A. Chattopadhyay**, K. Roy, Raj Dandekar — *Metatuning: Model-Grounded Symbolic Artificial Intelligence Systems Learning and Reasoning*. In: **Neurosymbolic Learning and Reasoning Conference (NeSy 2025)**, San Diego, May 2025. Proceedings to appear in *Journal of Machine Learning Research (JMLR)*. Extended version submitted to the *Neurosymbolic Artificial Intelligence (NAI)* journal. [Paper Link]

- First-author long paper introducing a middle-ground between few-shot prompting and full fine-tuning.

- Proposes *metatuning*, enabling structural alignment of LLMs on consumer hardware.
 - Conducted under mentorship of Kaushik Roy (Asst. Prof., University of Alabama).
 - Presented at NeSy 2025, San Diego.
- **A. Chattopadhyay**, et al. — *EduTree: Analysis of the Academic Genealogy of Education*. In: **ACM/IEEE Joint Conference on Digital Libraries (JCDL 2020)**, Aug. 2020. [[Paper](#) [Link](#)]
- Designed an academic genealogy graph modeling mentorship lineages and institutional influence.
 - Applied graph-theoretic centrality and topic modeling to quantify researcher impact.
 - Revealed high-centrality mentors, pioneering institutions, and thematic research trajectories.
 - Awarded *Best M.Tech Thesis Project*.

ENTREPRENEURSHIP

2Vid Link	2023–2025
<ul style="list-style-type: none"> • Developed a UGC video generation platform enabling AI-created content through automated storyboarding, text-to-speech, face-swapping, lip-syncing, and compositing. • Designed and implemented AI-driven video pipelines using DeepFaceLab, Wav2Lip, and OpenCV for seamless facial reenactment and synchronization. • Built an automated B-roll generation system leveraging web scraping, video understanding models (Qwen2.5-VL, Video-LLaMA), and Unreal Engine for physics-based storytelling. • Optimized GPU-accelerated microservices for text-to-speech and face-swapping, achieving fast, scalable video synthesis. 	
Care4U (Acquired) Link	2017–2019
<ul style="list-style-type: none"> • Built an AI-driven elderly healthcare app using TensorFlow Lite for on-device fall detection. • Developed an LSTM model leveraging accelerometer and gyroscope data to detect falls in real time. • Integrated emotion recognition, medicine reminders, and caregiver connectivity modules. • App gained national media coverage, later acquired by Govt. of West Bengal, now serving 1M+ elderly users. 	
Bookopedia Link	2018–2020
<ul style="list-style-type: none"> • Founded an online marketplace for buying and selling used books. • Onboarded 300+ sellers from College Street, Kolkata — Asia's largest used books hub. • Scaled operations to an annual recurring revenue (ARR) of \$750K by third year of undergrad. • Authored and published Sharp Cookie, a curated collection of previous-year IIT Kharagpur question papers and solutions. • Distributed 5000+ copies; project now maintained as open-source and archived in the National Digital Library of India. 	

COMPETITIONS AND AWARDS

International Hackathons Link	2025
<ul style="list-style-type: none"> • Winner – Daft-Daytona Hackathon: Built an AI agent for interior design using Gemini nano Banana and Nano VLM, enabling layout-preserving redesigns; won First Prize.[Link] • Winner – Neo4J x SambaNova Hacknight: Created a persistent memory system for coding agents using Neo4J and SambaNova, winning the SambaNova Track.[Link] • YC Overnight Hackathon: Invited participant at the prestigious Y Combinator Overnight Hackathon in San Francisco. 	
National Hackathons Link	2017–2024
<ul style="list-style-type: none"> • Winner – EF GenAI Hackathon (2023): Built a prompt-to-video engine with intelligent image selection, sentiment-based BGM, and multilingual support; winner from 200+ participants.[Link] • Winner – HSBC AI Hackathon (2018): Built a conversational AI using tkinter and MLP networks mapping symptoms to diseases via Neo4J; 1st among 98 teams.[Link] • Winner – vesAIthon (2019): Created Care4U, an AI-driven elderly healthcare app with fall detection, mood recognition, and chatbot; later acquired by Govt. of West Bengal.[Link] • Other Achievements: Runners-up at Smart India Hackathon (2020); Finalist among 1400+ teams at NEC AI for Transportation Hackathon (2021); Finalist in 5+ national AI hackathons focused on social good and automation.[Link] 	