

AADITYA BARAK

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EDUCATIONAL QUALIFICATION	YEAR OF PASSING	SCHOOL/COLLEGE	SCORE
Bachelor of Engineering (Electrical and Electronics Engineering)	2022-Present	UIET, Panjab University	
XII (CBSE)	2022	Hansraj Public School	81.0%
X (CBSE)	2020	Hansraj Public School	89.0%

SKILLS

- **Programming:** Python, C, C++, MATLAB
- **Machine Learning & AI:** PyTorch, Hugging Face, OpenCV, CNN, NLP, FastAPI, LangChain, Model Fine-Tuning, StreamLit, RESTful API's, WebSocket, Cursor, Claude Code, N8N
- **IoT:** Arduino, Raspberry Pi, ESP32, 8085 Microprocessor
- **Tools:** CX Programmer, NB Designer, P-Spice, Simulink, Cursor, Git/GitHub, Bash

INTERNSHIP/Freelancing

PRUDENTBIT (AI Intern)

May 2025 – Present

- Developed **automated redaction** for **Excel** files, enabling detection and replacement of sensitive information with entity placeholders to ensure data privacy and regulatory compliance.
- Implemented a **black box redaction system** for documents, **visually masking detected PII** with precise, pixel-level overlays while preserving document structure and readability.
- Built an advance **image preprocessing pipeline** that enhances scanned and low-quality documents, including **skew correction**, **orientation adjustment** and **noise reduction**, significantly improving OCR accuracy.
- Designed an **intelligent OCR workflow** that segments images and maps extracted text to exact coordinates enabling accurate identification and redaction of sensitive data in both images and embedded PDF's

ZapUp (Website) [\[LINK\]](#):

- Developed a full-stack educational platform using **Next.js**, **React** and **Supabase** enabling dynamic access to hierarchical textbook content, exercises and AI-generated solutions for multiple subjects and classes
- Implemented an AI-powered study assistant chatbot with context-aware hints, educational content filtering and conversation history leveraging **OpenRouter API** for real-time student support.
- Integrated **Razorpay** payment gateway for secure subscription management, including order creation, payment verification and automated user access control across multiple subscription tier
- Used **Supabase** to store the user preferences, state/school selection and real-time profile management with robust **RESTful API** endpoints

TITTA Chatbot [\[LINK\]](#):

- Developed an **AI-powered construction analysis chatbot** using **FastAPI**, **Redis**, **Supabase**, **OpenRouter**, and **Sentence Transformers**.
- Enabled the chatbot to **analyze complex civil and structural drawings**, detect design inconsistencies, and suggest engineering improvements.
- Integrated **document parsing and vector-based semantic understanding** with **Sentence Transformers** for accurate interpretation of construction documents (PDF/CAD).
- Implemented **agentic capabilities** allowing automated **task scheduling**, **meeting creation**, and **peer email communication** directly through chat.

ML/AI PROJECTS

- **Deep fake Detection System (Smart India Hackathon) | [GitHub](#) |:**
 - Developed **CNN-based model** achieving 93% accuracy using **TensorFlow** and **VGG16 transfer learning**.
 - Implemented **face extraction preprocessing** with **OpenCV** and comprehensive performance evaluation.
 - Created comprehensive **Evaluation Metrics** to measure model performance across diverse datasets
 - Designed solution to address growing concerns about AI-generated media manipulation
- **Token Classification With BERT-Large-Uncased | [Hugging Face](#) |:**
 - Developed a **Token Classification** pipeline using a fine-tuned **BERT-Large model**, achieving high on accuracy on the **CoNLL-2003 NER dataset**
 - Leveraged **Hugging Face Transformers and PyTorch** for state-of-the-art NLP model implementation and training
 - Integrated additional **NLP preprocessing** with **SpaCy** and **FastAI** for efficient data handling and training
 - Evaluated model performance using standard **NER metrics** across diverse datasets with achieving **accuracy 98.5%**.
- **Real-time Chat Room Application | [GitHub](#) |:**
 - Developed a real-time chat application using **FastAPI** and **WebSocket** technology, implementing features like message persistence, user notifications and emoji support and realtime communication protocols
 - Created a responsive frontend interface with HTML/CSS/JavaScript integrating real-time updates and user interactions highlighting full-stack development capabilities and user experience design skills
 - Used **Ngrok** for exposing the endpoint of **FastAPI**
- **Youtube Bot -AI- Powered |[GitHub](#)|:**
 - This is an an AI-driven YouTube content assistant that integrates multiple language models (OpenAI , Anthropic, Google Gemini and Hugging Face) to help with content creation and analysis
 - It's designed to assist with Youtube content management and generation, leveraging various AI services through the Langchain Framework for enhanced functionality
- **RAG ChatBot -Document-Based Chatbot System |[GitHub](#) |:**
 - Built a sophisticated document-based chatbot using **FastAPI** backend and **StreamLit** frontend that processes that multiple file formats (**PDF, TXT, CSV, MD**) and enable natural language quires against uploaded documents
 - Implemented advance embedding techniques with FAISS vector store for semantic search and integrated **GPT -4** for intelligent, context-aware responses based on documents content
 - Developed comprehensive system with **PostgreSQL database SQLAlchemy ORM, exception logging, chat history tracking and PII protection features**.
 - Created **RESTful API** endpoint for document management, real-time chat interface and monitoring capabilities with robust error handling and input validation

CERTIFICATIONS & ACHIEVEMENTS

- Qualified for Smart India Hackathon 2024 at University level.
- Lang Chain and SQL Intermediate Certifications (Udemy, Solo learn).
- Python Programming (EI Systems). ○ SQL intermediate Level (Sololearn)