

# AYAAN AHMED KHAN

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## EDUCATION

ILLINOIS INSTITUTE OF TECHNOLOGY | Chicago, Illinois

Expected May 2026

Bachelor of Science in Artificial Intelligence; Minor in Architecture

Relevant Coursework: DSA, AI, ML, NLP, DBMS, Assembly, Data Mining, Discrete Math, Linear Algebra, Probability, Statistics, OOP

## WORK EXPERIENCE

AI & DIGITAL DEVELOPMENT INTERN | Chicago, Illinois

May 2025 - Present

The Syntec Group

- Working under the President of the firm, managing social media outlets by creating and publishing professional content posted weekly.
- Built an RAG chatbot ingesting numerous internal docs, delivering cited, context grounded answers.
- Leading a website redesign, improving navigation, categorization, and overall user experience to streamline access to firm resources alongside analyzing engagement metrics to optimize post performance and leveraging AI powered tools for content creation and trend analysis.
- Improved overall LinkedIn impressions by 122% and bimonthly by 25% towards 400+ new followers.

PROJECT MANAGER | New Delhi, India

June 2023 - July 2023

Excelerate (Globalshala)

- Organized a live global event focusing on team creation, documentation, tasked thinking in a collaborative environment surrounding academia for the organization, considering risk management, and outsourcing to our audience with an approved budget of \$30,000.

## PROJECTS

CLUTCH | Personal Project

January 2025 - Present

- Built Clutch, a staging-deployed SaaS that turns vague learning goals into structured, research backed courses via a multistage AI pipeline; orchestrated 5 AI agents across research, curriculum design, content generation, and QA with Inngest and 3 step retry logic.
- Implemented an async FastAPI backend with PostgreSQL + pgvector and Redis caching; added real time progress streaming (Redis + SSE) to support long running generation jobs with responsive UX.
- Cut inference cost and improved output quality using LiteLLM routing and shared source deduplication; enforced structured outputs with PydanticAI validation and added observability via Sentry and PostHog.

SYNTEC AI CHATBOT | Professional Project

May 2025 - Present

- Shipped a semantic search chatbot using GPT-4o and ChromaDB vector embeddings to provide instant Q&A across PDF documents, blog posts, and website content with automated source citations and context aware responses.
- Implemented production ready system with React UI, Flask API, WordPress blog integration, web scraping, Redis caching (65% cost reduction), security features, and Docker deployment for dual internal/client use.

INVESTOCHAT | Personal Project

October 2025 - Present

- Engineered production ready RAG system for real estate investment queries with multi path retrieval (pgvector + SQL fallbacks with MMR), OCR processing via DeepInfra, and automated table extraction/classification for payment plans and unit specifications from PDF brochures.
- Integrated WhatsApp Business API with automated question lead qualification flow, real time Airtable CRM sync for HNI (High Networth Individuals) leads, commission tracking system, and rate limiting with PII detection using FastAPI and PostgreSQL.

SENTIMENT ANALYZER | Academic Project

September 2025 - December 2025

- Engineered a machine learning classifier using Logistic Regression with TF-IDF features (1-2 grams) to analyze 50K+ Amazon fine food reviews, achieving high accuracy through L2 regularization and balanced class weighting on preprocessed text data.
- Built an interactive Streamlit web application with real time sentiment prediction and confidence scoring, implementing complete ML pipeline from data preprocessing (noise removal, text cleaning) to model deployment.

NEUROLEARN | Academic Project

September 2025 - December 2025

- Designed AI-driven logic for adaptive learning flow in NeuroLearn, enabling quiz-based performance detection and content personalization for neurodivergent learners; structured system behavior to simulate ML integration and ensure future model compatibility.
- Translated conceptual AI components into actionable system design, co-authoring documentation for detection logic and feedback loops that supported intelligent recommendations and user-centered interface behavior across prototype and presentation assets.

TREND ANALYZER FOR RAW MATERIALS | Personal Project

March 2025 - May 2025

- Developed a cotton price forecasting system using Facebook Prophet and external regressors (crude oil, natural gas, soybeans), achieving 19.55% MAPE on 6 month forecasts with 755 days of real commodity futures data.
- Built a time series forecasting model with cross validation that improved 1 year prediction accuracy by 27.9% through multivariate regression analysis of correlated commodity markets (0.77 correlation with oil prices.)

## SKILLS

**Tools/Frameworks:** Python, Java, R, SQL, HTML/CSS, JavaScript, NumPy, Pandas, TensorFlow, PyTorch, Scikit-learn, HuggingFace, LangChain, Redis, PostgreSQL, Chroma, React, Flask/FastAPI, Figma, Matplotlib, Tableau, Docker, Git, REST API, CI/CD, Bash

**Certifications:** Java Intermediate (Sololearn), Python for Data Science, Python for AI Development (IBM), Introduction to HTML, CSS & JS (IBM), Design Thinking for Innovation (Coursera), SQL Specialist (Intel), Python Specialist (The Grammy's)