

# Nimish Duggal

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## EDUCATION

**Thapar Institute of Engineering and Technology**

BTech in Computer Science and Engineering (GPA: 9.33)

**Patiala, Punjab**

Graduation: July 2026

## WORK EXPERIENCE

### IDEA Foundation

**August 2024 - February 2025**

*Data Science Intern*

[Certificate](#) (Remote)

- Optimized and deployed an AI-powered content generation agent leveraging **CrewAI**, **OpenAI**, and **Docker**, enhancing automation efficiency. Designed and implemented a seamless pipeline to automatically publish generated blogs to Shopify, reducing content creation and posting time **from 7 minutes to under 4 minutes**.
- Designed and deployed 10+ API endpoints using **FastAPI** and **PostgreSQL** to convert AI solutions into a real-world application.
- Developed a system to extract and store necessary information from different types of handwritten and printed invoices.
- Built AI Agents for an AI-driven question paper generator using **LangGraph** and **Llama3** models, automating syllabus-based question creation.

## PROJECTS

### Multilingual RAG System

[Github](#)

*Python, LangChain, FAISS, PyTesseract, HuggingFace Transformers (e5), LLMs, Gemma3, FastAPI*

- Built a **CPU-friendly** multilingual RAG pipeline capable of handling document-based question answering in **Punjabi, Hindi**, and **English**.
- Performed **OCR** on Punjabi images using **PyTesseract**, then applied automated translation using **IndicTrans2** to **Hindi** and **English**.
- Employed **LangChain's RecursiveTextSplitter** to chunk translated documents and generated **vector embeddings** using the **pretrained e5 model**.
- Stored and managed language-specific document embeddings using **FAISS** for efficient semantic retrieval.
- Implemented **language-aware retrieval** to fetch relevant context from **FAISS** indexes based on query language.
- Integrated **Gemma 3B** via **Ollama (CPU)** for **LLM-based answer generation** using retrieved context.
- Developed **FastAPI endpoints** to support document ingestion and query-based answer generation for end-to-end **Retrieval-Augmented Generation (RAG)** support.

### VibeSync - Facial Emotion Based Music Recommendation System

[Hugging Face](#)

*Python, Tensorflow, Keras, ResNet50v2, OpenCV, Gradio*

- Implemented custom **CNN models**, and **transfer learning** using ResNet50v2, achieving **64% accuracy** in emotion classification and handled class imbalance using data augmentation.
- Utilized a pre-classified song library of spotify songs for song recommendation.
- Deployed the emotion detection system with music recommendations using **Gradio** on **Hugging Face**.

### Multitasking Classification from EEG Data

*Python, Tensorflow, Keras, STEW dataset*

- Built a **CNN-XGBoost** model achieving **80.34% accuracy (Precision & Recall: 0.80)** for multitasking classification on STEW dataset.
- Extracted statistical features related to Power Spectral Density, Higuchi fractal dimension, Approximate Entropy etc.
- Compared our approach to other models like AdaBoost, XGBiist, BiLSTM, TabNet, ChronoNet etc.
- Co-authoring a research paper based on findings.

## SKILLS & INTERESTS

**Languages:** Python, C, C++, MATLAB, SQL

**Frameworks:** TensorFlow, Keras, Scikit-learn, Numpy, Pandas, FastAPI, Matplotlib, Langchain, CrewAI, Streamlit

**Development Tools:** Git, VS Code, Jupyter Notebook, Hugging Face, Docker

**Core CS:** Data Structures and Algorithms, Operating Systems, Database Management System, Computer Networks, Object Oriented Programming, Software Engineering, API Development, Data Science, Generative AI.

**Soft Skills:** Event Management, Communication Skills, Finance Management, Leadership, Time Management

## CO-CURRICULAR ACTIVITIES

- AYA Open Science Project Contributions [Certificate](#)
- Solved 300+ problems on platforms like Leetcode, CodeStudio, GeekforGeeks etc.
- 5 Star (Gold Badge) in Python on [HackerRank](#)

### Google Developer Student Club, TIET

*Finance Secretary*

**Patiala, Punjab**

Jul 2023 – Jun 2025

- Organized Rapid Code 2024 as the overall event coordinator, leading a team and collaborating across departments, and conducted a Machine Learning workshop at GDSC Bootcamp 23.