# Saksham Ralhan

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## EDUCATION

**Thapar Institute of Engineering and Technology**  —  Patiala, Punjab
*B.E in Electronics and Computer, CGPA - 8.77*  —  *Sep. 2022 – May 2026*

**Apeejay School**  —  Jalandhar, Punjab
*XII, Percentage - 82.4*  —  *April 2021 – May 2022*

## EXPERIENCE

**Data Science Intern**  —  June 2024 – July 2024
*Kion India*  —  *Pune, India (Onsite)*

- Developed and deployed a dual-stage ML pipeline (Random Forest + DNN with TensorFlow/Keras) that classified over **30,000 mechanical components** with **94% accuracy**, leading to a **65% reduction** in manual classification errors.
- Applied predictive analytics to forklift assembly sequencing, reducing average cycle time by **18%** using **feature engineering** and **supervised learning**.
- Designed a real-time gesture and face recognition system using **OpenCV** and **scikit-learn (300ms latency)** to enhance accessibility, enabling differently abled operators to control factory systems hands-free.

## PROJECTS

### ⌂ ExcelifAI
*Python, Streamlit, LangChain, Groq API, LLaMA 3, FAISS, PyMuPDF, SentenceTransformers*

A **Retrieval-Augmented Generation (RAG)** platform enabling semantic Q&A and summarization over academic PDFs using LLMs.

- Built a Streamlit interface to upload and chat with **over 5 PDFs** using a conversational interface.
- Enforced RAG pipeline via **LangChain** and **Groq-hosted LLaMA 3 8B Instant** for real-time responses.
- Parsed and semantically chunked over **1,000+ text segments** from academic PDFs using **PyMuPDF**.
- Encoded text chunks into dense vectors using **MiniLM** from SentenceTransformers and indexed them with **FAISS**.
- Improved multi-turn Q&A coherence by **30–40%** using **ConversationBufferMemory** to retain prompt history.
- Reduced generative response time by up to **85%** vs. baseline by deploying on Groq's LPU servers.

### ⌂ YouTwit
*MongoDB, Express.js, React.js, Node.js, Mongoose, Tailwind CSS, JWT, Cloudinary, REST APIs, Aggregate Paginate, Axios, Vite*

A **full-stack** video and microblogging platform combining YouTube and Twitter features

- Implemented secure authentication with **6-token workflows** including login, refresh, logout, and session validation using **JWT**.
- Designed and tested **30+ RESTful APIs** for user content: tweets, videos, likes, comments, watch history, and subscriptions.
- Used **mongoose-aggregate-paginate-v2** to efficiently paginate comments, liked content, and user watch history.
- Enabled seamless upload of **video files up to 100MB** via **Cloudinary**, and designed a responsive **Tailwind CSS**-based UI with a consistent blue-white theme.
- Developed **5+ modular pages** including Dashboard, Video Feed, Tweet Panel, Channel View using **Axios**.

## TECHNICAL SKILLS

**Languages**: C/C++, Python, Java, JavaScript, HTML/CSS, MySQL
**Frameworks**: React, Node.js, Express, Tailwind, Streamlit, Tensorflow, Keras
**Developer Tools**: VS Code, Github, MongoDB Atlas, Postman, Cloudinary, Jupyter Notebook
**Libraries**: Langchain, FAISS, HuggingFace Transformers,Sentence Transformers, PyMuPDF, pandas, NumPy, Matplotlib, Beautiful Soup, scikit-learn, OpenCV, seaborn
**Coursework**: Data Structures, OOPS, Computer Networks, DBMS, Operating Systems

## ACHIEVEMENTS

- Top 1% (**AIR 24**) – ZS Campus Beats 2025: Ranked 24th out of 15,000+ participants across 3,200+ teams nationwide.
- Secured **2$^{nd}$ rank** in branch and awarded a merit scholarship for **excellent academic performance** in the first year.