# ABHAY SINGH

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## Education

COER University — Roorkee, Uttarakhand, India
Bachelor of Technology in Computer Science and Engineering — Sep 2022 – Present

## Experience

**Maxim Design Systems** — Remote
Software Developer · Internship — Jan 2025 – Apr 2025

- Designed TCURVE, a PyQt5-based multi-panel analysis app for comparing up to 4 datasets; improved analysis speed by 60%.
- Automated Parameter Optimization by integrating NGSpice and SciPy, reducing fitting time by 80% and achieving <5% RMSE.
- Built a PyQt5-based ML tool in Python and scikit-learn to train neural networks on 780K-row datasets with 95% accuracy and GUI-driven multi-target prediction tool.

**Infosys Springboard** — Remote
Python Full Stack · Internship — May 2024 – Jul 2024

- Combined Tesseract OCR, OpenCV, and PyPDF2 to build a bank cheque data extractor, reducing manual entry errors by 15% and increasing processing speed by 20×.
- Engineered a Tkinter-based GUI with SQLite integration for efficient data storage and retrieval, improving usability and reducing the learning curve by 30%.

## Projects

**Natural Language SQL Query System Using LLMs** — May 2025 – Jun 2025

- Developed an NLP system using Mistral LLM to convert English to SQL with 95% accuracy, supporting joins, aggregations, and subqueries.
- Integrated voice interface with Vosk (ASR) and pyttsx3 (TTS) for hands-free SQL querying (<500ms latency, 85% accuracy in noise).
- Created a FastAPI + Streamlit app serving 100+ users; cut SQL query latency by 60% using SQLite and responsive UI design.

**Android Malware Detection System Using Machine Learning** — Nov 2024 – Jan 2025

- Trained a stacking model (Logistic Regression, SVM, Random Forest) with 96.9% recall and 84.2% accuracy on malware classification.
- Increased accuracy by 12% using API and permission-based features; reduced false negatives on obfuscated apps by 18%.
- Processed 30K+ APKs in a scalable ML pipeline (96% recall), automating malware detection via API and permission feature extraction.

**Real-Time Face Recognition Attendance System** — Aug 2024 – Sep 2024

- Architected a FaceNet-based recognition engine using Flask and OpenCV, enabling real-time webcam attendance tracking for 100+ users and eliminating manual entry.
- Deployed 10 REST endpoints covering user enrollment, attendance capture, analytics, and admin control to enable full CRUD capability.
- Encrypted facial embeddings and implemented session auditing, improving cross-device recognition consistency by 25%.

## Skills

**Core Programming:** Python, Java, JavaScript
**AI & Machine Learning:** Computer Vision, LLMs, NLP, Feature Engineering, Model Tuning.
**Frameworks & Tools:** FastAPI, Flask, PyQt5, Docker, React.js, SciPy, RESTful APIs.
**Databases:** MySQL, SQLite, Firebase, MongoDB.
**Development Tools:** Git, GitHub, Power BI.

## Certifications & Achievements

**Paper Presentation at SocProS 2025** – IIT Roorkee Link

- Presented research on "Threshold Optimized Ensemble Learning for Android Malware Detection" at an international conference.

**Certified AI & Data Quality Analyst** – IIT Mandi iHub & NSDC (2024) Link

- Attained expert-level proficiency in data quality analysis and AI model development by completing a 480-hour, Grade A certified training under the PMKVY scheme, and scoring in the top 5% of the cohort.