

DHANUPRIYA A  
PYTHON & AI DEVELOPER

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 <https://pythonmlclub.github.io/Portfolio/Dhanu/>

PROFESSIONAL SUMMARY

**Python/AI developer with 3.3 years of experience** specialising in generative AI, enterprise search, and advanced computer vision systems. Experienced in building LLM-powered analytics platforms, hybrid semantic search engines, and automated ETL pipelines using Snowflake, LangChain, and FastAPI. At Texila, I was leading development of the Netrica AI real-time CCTV monitoring and smart attendance system, integrating YOLOv8, ArcFace ONNX, MediaPipe FaceMesh, and DFS for high-accuracy identity verification and intelligent video analytics. Strong expertise in combining LLMs, deep learning models, and cloud-native architectures to deliver scalable, production-ready AI solutions across healthcare, surveillance, and enterprise automation. Recognised for creating user-centric, reliable, and efficient AI applications that bridge business needs with cutting-edge machine learning innovation.

WORK EXPERIENCE

**Python/ML Developer - Texila Educare Healthcare and Technology Enterprise Pvt., Coimbatore May 2025 – Nov 2025**

- Led the end-to-end development of **Netrica AI**, a real-time **CCTV** monitoring and smart attendance platform that integrates **face detection**, **face recognition**, posture analysis, and automated attendance logging.
- A complete face recognition pipeline was built using **YOLOv8** (face detection), **MediaPipe FaceMesh** (alignment), and **ArcFace ONNX** (512-D embeddings) with **FAISS/cosine similarity** for high-accuracy identity verification.
- Engineered a resilient **FFmpeg**-based **RTSP** ingestion system with auto-reconnect, frame skipping, queue buffering, and multithreaded frame processing to support multiple live camera streams.
- Designed and implemented entry/exit attendance logic, event validation rules, and fallback mechanisms to ensure reliable attendance tracking in high-traffic environments.
- Developed **Flask + FastAPI** backend services for camera control (start/stop), **ROI** configuration, real-time **MJPEG** streaming, attendance logs, crowd alerts, and secure authentication.
- A Streamlit-based employee onboarding app was created to enable face registration, embedding creation, image validation, and **SQL Server** insertion using both webcam capture and file upload.
- Real-time crowd detection was implemented using **ROI** zoning, person clustering, and **DFS**-based proximity graph algorithms, capturing snapshots with posture metadata.
- The system performance was optimised using **GPU** acceleration (CUDA), **ONNXRuntime** optimisations, caching strategies, and asynchronous background tasks for **DB** operations and image saving.
- Designed **SQL Server** schema for employees, embeddings, attendance, and crowd events, including indexing, caching, and optimised read/write queries for high throughput performance.
- Robust logging, monitoring, and exception handling were implemented, including rotating logs, per-camera diagnostics, **FPS** tracking, and auto-recovery for unstable **RTSP** streams.
- Collaborated with the IT/DevOps team for deployment, created a **Dockerfile**, and ensured that the application was fully container-ready while DevOps handled server-level orchestration.
- Enhanced overall system reliability, workplace security, and operational efficiency through automated identity verification and centralised, real-time camera analytics.

**GitHub link:** [NetricaAI CCTV-Monitoring-and-Smart-Attendance-System from CCTV Surveillance is a Git](#)

## Python/ML Developer - PBS Info Systems Pvt Ltd, Madurai Jan 2024 – Apr 2025

- Enterprise-grade AI and data solutions that combine cloud-native technologies, **generative AI**, and Snowflake were created and put into use to provide real-time business intelligence and automation.
- Developed the first-ever real-time **ETL pipeline for Document AI** ingestion and validation using Snowflake, allowing automated vendor document extraction, metadata-driven validation, and operational monitoring through a Streamlit LiveView dashboard. **GitHub link: [Document AI Pipeline on GitHub](#).**
- Created a hybrid **semantic search** platform with a **generative AI** interface that provides context-aware search for structured and unstructured enterprise data by utilising Snowflake Cortex Search, Arctic Embed and LangChain. **GitHub link: [Cortex Search GitHub](#)**
- Created LLM-powered **Text-to-SQL** tools (**Cortex Analyst**), which are closely integrated with Snowflake for safe, real-time analytics and allow non-technical users to query complex datasets using natural language. **GitHub link: [Cortex Analyst GitHub](#).**
- Developed a **Cortex Agent** platform (FastAPI + React) that enables safe and interactive enterprise data exploration through YAML-driven schema routing, JWT-based authentication, and real-time visualisation. **GitHub link: [Cortex Agent GitHub](#).**
- Developed **forecasting** and **anomaly detection** pipelines for time series in Snowflake, using supervised and unsupervised models to detect anomalies in financial transactions. **GitHub link: [Anomaly Detection GitHub](#).**
- Using **Apache Airflow** and **Azure Blob Storage**, I designed and coordinated Python-based **ETL processes** for the large-scale, high-throughput ingestion and transformation of **Parquet/JSON** data sets.
- Enhanced memory efficiency, query performance, and downstream visualisation through optimised chunk-based processing and nested JSON **flattening**.

## Junior Python Developer – Dot Com Infoway Ltd., Madurai Sep 2022 – December 2023

- Developed an **AI-powered chatbot with a focus on women's safety** and health using Django, **natural language processing**, and **OpenAI's** large language model. It includes voice-to-text accessibility for inclusive user interaction and keyword/topic filtering for responsible AI behaviour.
- Identified and fixed important **SMTP** configuration problems for the Akshaya India website, restored the delivery of outgoing emails, guaranteed audit compliance, and enhanced client correspondence.
- An **image upscaling** platform was created that uses **OpenCV**, **NumPy**, and **deep learning models (EDSR)** to improve low-resolution images up to 8x without sacrificing detail or sharpness.
- To ensure that solutions satisfied functional, performance, and compliance requirements, I worked with cross-functional teams.
- Produced Python apps that are ready for production, with thorough documentation and tried-and-true processes that guarantee scalability and maintainability.

## EDUCATION

- 79% of students enrolled in The American College's Master of Computer Applications (MCA) program from 2019 to 2022
- 79% of students at E.M.G. Yadava Women's College earned a Bachelor of Computer Applications (BCA) between 2016 and 2019.
- Completed Higher Secondary Education (12th) in 2016 from Nirmala Girls Higher Secondary School with 83%.
- Completed Secondary Education (10th) in 2014 from Nirmala Girls Higher Secondary School with 91%.

## SKILLS & COMPETENCIES

### Programming

- Python (Advanced), SQL, MySQL

### Machine Learning & AI

- Classification, Regression, Forecasting
- Time-Series Modeling, Anomaly Detection
- Unsupervised & Supervised ML
- Model Optimization, Embedding Techniques

## Generative AI & NLP

- LLM Integration (OpenAI, LangChain, Arctic-TILT)
- Text-to-SQL, Semantic Search, Hybrid Search
- Document AI (Extraction, Validation)
- Retrieval-Augmented Generation (RAG)

## Computer Vision & Video Analytics

- YOLOv8 (Face/Person Detection), MediaPipe FaceMesh (Pose/Face Alignment)
- ArcFace ONNX (512-D Embedding), FAISS (Vector Search)
- Live CCTV Stream Processing: OpenCV, FFmpeg, RTSP
- Frame Optimization, Deduplication Logic, Multi-Camera Processing
- Crowd Detection, ROI-based Analytics, DFS

## Snowflake ML & Data Engineering

- Cortex Search, Cortex Analyst, Cortex Complete
- Metadata-driven ETL Pipelines
- Snowflake-native LLM & Vector Workflows

## ETL & Data Pipelines

- Apache Airflow (Orchestration)
- Parquet/JSON processing, Chunk-based File Handling
- JSON Flattening, High-throughput Data Ingestion
- Azure Blob Storage

## Backend Development

- FastAPI, Flask, Django
- OpenAPI, REST APIs
- JWT Authentication, Multi-threaded Services
- Real-time API Streaming & Monitoring

## Web/UI & Dashboards

- Streamlit (Advanced), HTML/CSS
- Real-time Analytics Dashboards
- Basic React for interface components

## Databases

- SQL Server, MySQL, Snowflake
- ODBC, Stored Procedures, DB Optimization

## Tools & Platforms

- Docker (basic), Git
- Visual Studio Code, Jupyter Notebook, Google Colab
- Apache Airflow UI, Streamlit

## Operating Systems

- Windows, Ubuntu (Linux-based development & deployment), Remote

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## ACHIEVEMENTS

- Appreciated by Texila Educare Healthcare and Technology Enterprises for delivering a remarkable contribution by developing and preparing the deployment of a CCTV surveillance project, recognised for teamwork, problem-solving, and going the extra mile (2025).
  - Recognised for successfully implementing Enterprise Search at PBS Info Systems; published Transforming Enterprise Search with AI Using Snowflake Cortex Search on [Medium](#). (2024)
  - Awarded "New Technology Enthusiast" (2023) by DotComInfoway.
  - Recipient of the Academic Proficiency Certificate of Merit Award at E. M. G. Yadava Women's College (2019).
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