Aqsa Asif

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Education

Air University   *Islamabad, PK*   **September 2020 - June 2024**
Bachelor of Science in Computer Science

Final Year Project (FYP): Fashion Pattern Generation using DCGAN

- Developed a deep convolutional generative adversarial network (DCGAN) for generating fashion patterns.
- Researched and applied advanced neural network techniques for the project.

Relevant Courses: Machine Learning, Artificial Intelligence, Data Science, Deep Learning, Digital Image Processing, Web & Mobile Development, OOP, Data Structures

PAEC Model College   *Nilore, Islamabad, PK*   **August 2019 - July 2020**
Intermediate in Science

Professional Experience

AI Developer
Zikra Infotech LLC (Remote) — May 2025 – Present
- Built a modular RAG pipeline using LangGraph and Gemini 2.0 Flash with FAISS, HuggingFace embeddings, recursive chunking, and query rewriting for domain-specific question answering.
- Designed and deployed memory-augmented agents for long-term personalization using Google Vertex AI.
- Developed a LangGraph-based customer support system leveraging ChatVertexAI and dynamic routing.
- Authored an internal technical guide comparing chunkers, retrievers, and orchestration tools in the RAG stack.

Freelance AI Developer
Upwork & Fiverr (Remote) — Oct 2024 – Present
- Delivered custom AI applications including a document-aware RAG assistant built with LangChain and Streamlit.
- Created an AI pipeline for text-to-video synthesis using LLaMA and GANs for multimedia production.
- Implemented STT/TTS systems using Whisper and GANs for human-computer interaction.
- Built BERT-powered sentiment analysis systems, document summarizers, and chatbots for diverse clients.

Research Intern (AI Developer)
Pakistan Institute of Engineering & Applied Sciences (PIEAS) — Jul 2022 – Present
- Developed an educational chatbot for Discrete Math using Flask, BERT, and Firebase.
- Led AI research in GANs, vision transformers, and multi-agent systems applied to edtech and medical domains.
- Co-authored papers in IEEE and arXiv on medical imaging and AI-based tutoring systems.

AI Intern & Web Developer
Air University — Jul 2023 – Sep 2023
- Developed a .NET healthcare web app for Fazaia Medical College with speech-to-text integration.
- Deployed a full-stack, responsive medical system for patient data management and analysis.

Projects

- LangGraph-Based Autonomous Memory Agent: Structured and episodic memory implementation using Gemini and FAISS.
- PDF RAG Chatbot: Streamlit app combining LangChain, file upload, CSV export, and semantic QA.
- LSTM Stock Prediction: Built a forecasting tool using Exponential Moving Averages and LSTM on Yahoo Finance.
- Business Scenario Assistant: LangChain + Chroma multi-agent tool for Gherkin story generation.
- Doc Summarizer: Hugging Face transformers used to summarize DOCX and PDF content.
- AI-Powered BI Dashboard: Power BI + backend pipeline for patient and investor data analysis.
- Autogen-Based Multi-Agent Systems: Implemented and tested dynamic, context-aware agents using AutoGen, including a fully functional chess game played autonomously by agents.
- Creative Presentation Slide Generator system using multiple agents in Autogen framework.
- Text-to-Video Generation (LLaMA, GANs): Designed a pipeline to generate short video sequences from textual prompts using LLMs and GAN-based architectures.
- Speech Recognition (TTS/STT using GANs): Built speech-to-text and text-to-speech systems utilizing pre-trained GAN models and audio processing techniques.
- Fashion Pattern Generation (DCGAN): Generated realistic fashion design pattern images using Deep Convolutional GANs, based on input images or text prompts.
- Image-to-Text System (ResNet50, OpenCV): Developed a tool to convert visual data into structured textual output using ResNet50 and image preprocessing techniques.
- Object Detection (YOLO, Mask R-CNN): Built object detection systems using advanced models for real-time and high-accuracy recognition in images and videos.
- Implemented a virtual try-on application using the VITON dataset and framework to simulate clothing fit on human models.

Publications

- **A Survey of Vision Transformers and Their CNN-Transformer Based Variants** - Published in Artificial Intelligence Review (2023), Impact Factor: 12.00.
- **A Recent Survey of Vision Transformers for Medical Image Segmentation** - Published on arXiv (2023).
- **Deep Auto Encoder-Based Chatbot for Discrete Math Course** - Presented at the 2022 International Conference onRecentAdvancesin ElectricalEngineering & Computer Sciences (RAEE & CS), IEEE.

Achievements & Certifications

- IEEECertificate ofParticipationfor presenting research on *Deep Autoencoder-Based Chatbot for Discrete Maths* ~ IEEE International Conference on RAEECS (2022)
- Winner, Air University Writers Club Competition (2022)
- Participant, "Queen of Codes" Coding Competition – AUCIS WiC (2023)
- Microsoft Copilot Sprint Ambassador – Earned badges in AI Builder, GPT, Power Automate, and Copilot for M365 (2024)
- Coursera Certifications: Machine Learning Specialization, Advanced Learning Algorithms, Neural Networks & Deep Learning, Supervised & Unsupervised ML, Image & Video Processing (2023–24)