DHANUSH RATHINAVELU

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TECHNICAL SKILLS

Programming Languages: Python, SQL
Tools & Frameworks: FastAPI, LangChain, ComfyUI, OpenCV, Pandas, NumPy, Matplotlib
ML & AI: TensorFlow, PyTorch, Scikit-learn, Hugging Face, NLTK, Stable Diffusion
Cloud Platforms & Databases: Google Cloud Platform, BigQuery, AWS, Pub/Sub, Vector Databases

EXPERIENCE

Schnell Energy | [Website](#)   July 2024 – December 2024
Data Science Intern   *Coimbatore, India*

Cloud Data Engineer

- Implemented Google Cloud Functions (Python, Pub/Sub) for real-time smart lighting data ingestion, boosting operational efficiency
- Optimized BigQuery schema architecture and streamlined complex SQL workflows, improving query performance by **25%** on large-scale datasets
- Established scalable ETL pipelines and led IoT server migration, reducing manual effort by **30%** and improving system reliability and scalability by **50%**

Intelligent Chatbot Development

- Delivered a domain-specific AI chatbot using LLMs (OpenAI GPT-4) with custom RAG pipelines for smart lighting system support
- Orchestrated semantic retrieval systems using FAISS, embedding models, and advanced prompt engineering for accurate real-time responses
- Launched chatbot via FastAPI, Docker, improving field engineers' efficiency by **50%** through automated support across IoT systems

PROJECTS

ML-Enhanced PSO-FA Portfolio Optimization (*Python, Dash, PyTorch, PSO-FA Algorithm*) | [GitHub](#)

- Designed hybrid portfolio optimization framework combining PSO and Firefly Algorithm, improving asset allocation efficiency by **18%**
- Incorporated LSTM, Random Forest, and ensemble models to enhance stock price predictions with higher accuracy
- Engineered scalable data pipelines for **10+ years** of financial time-series data, cutting training time by **25%**

LanPaint-ComfyUI: Image Inpainting & Regeneration (*Python, PyTorch, Stable Diffusion, ComfyUI*) | [GitHub](#)

- Developed advanced image inpainting solution integrated into ComfyUI, enabling mask-based and mask-free workflows for stable diffusion models
- Built custom sampling node for iterative refinement, delivering **15–20%** higher perceptual quality without retraining
- Deployed with **5+** pre-trained diffusion models for diverse image editing and restoration applications

CLIMATEgpt: Open-Source Climate Intelligence Platform (*Mistral-7B, QLoRA, LoRA, FastAPI*) | [GitHub](#)

- Created AI-driven platform leveraging fine-tuned LLMs using Mistral, QLoRA, and LoRA techniques, achieving **92%** accuracy in providing authenticated climate data insights
- Architected modular pipelines for data retrieval, query analysis, and AI-driven response generation with real-time performance
- Implemented advanced fallback mechanisms and context-aware reasoning, improving response robustness by **20%**

AI-Powered Public Speaking Training Platform (*Python, Google Gemini AI, PostgreSQL, WebSockets*) | [GitHub](#)

- Built gamified full-stack platform with Google Gemini AI for real-time speech analysis, supporting **50+** concurrent sessions with **<2s** feedback
- Constructed AI feedback system evaluating energy, coherence, and timing across **20+** speaking prompts
- Crafted analytics dashboard tracking **15+** performance indicators with PostgreSQL schema, serving **100+** game sessions

EDUCATION

Coimbatore Institute of Technology   2021 – 2026

*MSc in Artificial Intelligence and Machine Learning | **Percentage: 80%***   *Coimbatore, India*

- **Relevant Coursework:** Machine Learning, Deep Learning, Reinforcement Learning, Natural Language Processing, Computer Vision, Data Analysis

CERTIFICATIONS

Google Cloud Platform: BigQuery and Pub/Sub Fundamentals - Cloud data analytics and real-time messaging systems
Cisco Networking Academy: Cyber Threat Management - Network security, vulnerability assessment
IBM SkillsBuild: Cybersecurity Fundamentals - Threat intelligence analysis and incident response methodologies

LEADERSHIP & ACTIVITIES

FOSS Club of CIT   June 2022 – May 2023

Innovation Head   *Coimbatore, India*

- Led 20+ member team, delivering technical workshops and managing 50+ events focused on open-source technologies
- Organized "The Coding Season" with 120+ students, covering programming knowledge in Large Language Models
- Led and executed strategic plans for over 12+ events and social media campaigns, optimizing outreach and engagement
- Managed an engaging event tailored for first-year students, attracting over 150 participants, fostering interaction and enjoyment