PRATHAMESH BAMB

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Education

Dr. Dy Patil International University   **Aug 2021 – June 2024**
Bachelor Of Computer Engineering   *Pune, Maharashtra*
Trade: Artificial Intelligence and Machine Learning (AI & ML)

Pimpri Chinchwad Polytechnic   **Aug 2018 – June 2021**
Diploma Of Computer Engineering   *Pune, Maharashtra*

Core Competencies

- **Programming Languages:** Python, SQL.
- **Machine Learning & Deep Learning:** Quantum Neural Networks, RAG, Scikit-learn, PyTorch, spaCy.
- **Data Analytics & Visualization:** Pandas, Numpy, Matplotlib, Seaborn.
- **Frameworks & Tools:** Git, GitHub, Tensor Flow, Jupyter Notebook, AWS.
- **Databases:** MySQL, Redis, Vector Databases.
- **AI-Specific Skills:** NLP, Computer Vision, Data Pre-processing, Feature Engineering.

Work Experience

Dr. Dy Patil International University (In-House Internship)   **May 2023 - July 2023**
Research Intern   *Pune, Maharashtra*

- **Task:** Designed a Quantum Machine Learning model using Quantum Convolutional Neural Networks (QCNN) for image classification, improving accuracy by 20% and computational efficiency by 30%.
- Benchmarked QCNN against LeNet-5 CNN using the MNIST dataset, highlighting advantages of quantum circuits in processing speed and accuracy for complex visual data.

Vowtech Technologies Pvt. Ltd.   **August 2023 - January 2024**
Machine Learning Intern   *Pune, Maharashtra*

- **Task:** Built a stock market forecasting system using LSTM, SVM with different kernels (linear, polynomial, and RBF), and XGBoost models to predict DAX index trends, improving forecast accuracy and better investment decisions.
- Preprocessed historical stock data, fine-tuned hyperparameters, and evaluated each model, achieving optimal performance metrics for time series predictions in financial analytics.

Showcase Projects

Medically Tuned AI Powered Chatbot using RAG

- Developed a Retrieval-Augmented Generation (RAG) based medical chatbot using LangChain, FAISS vector store, and Hugging Face's Mistral-7B model to provide accurate, context-aware health-related responses.
- Integrated sentence-transformer embeddings (all-MiniLM-L6-v2) and structured PDF chunking logic to build an optimized vector database of medical literature enhancing domain reliability.
- Applied prompt engineering and input validation to ensure the chatbot strictly responds only to health/medical queries, returning a fixed response to maintain domain focus and minimizing hallucinations.
- Built a responsive UI using Streamlit for real-time interaction for terminal-based Q&A, enabling dual-channel deployment and seamless end-user experience with reducing response latency by 40% compared to baseline configurations.

VOX: Voice Activated Personal Assistant

- Designed and implemented a Python-based voice assistant capable of understanding voice commands, executing system-level tasks like opening apps, sending emails, and web search, achieving 85% intent recognition accuracy through keyword-based parsing and Google Speech Recognition.
- Engineered a modular architecture with clear separation of voice input, intent processing, and action execution, enabling seamless integration of features and future extensibility.
- Integrated with Google's Speech Recognition library for real-time audio-to-text conversion and used Python's os module to automate desktop tasks, enhancing user productivity.
- Enabled dynamic voice feedback using "pyttsx3" (text-to-speech engine), creating a responsive, interactive assistant that simulates human-like conversation in a fully offline-capable environment.

Achievements

- **Certifications:** Generative AI (Microsoft, LinkedIn), Fine-Tune LLM's (LinkedIn), AI Ethics (LinkedIn)

- **Publications:** Published research papers in reputable international journals.