

JITEN BHALAVAT

✉ jbha0504@umd.edu | 📞 (240) 481-5543 | 🔗 LinkedIn | 🐙 GitHub | 🌐 jitenbhalavat.com

EDUCATION

University of Maryland, College Park

Master of Science in Applied Machine Learning

Aug 2024 - Expected May 2026

College Park, Maryland

Charotar University of Science and Technology (CHARUSAT)

Bachelor of Technology in Information Technology

Sept 2020 - May 2024

Gujarat, India

EXPERIENCE

Plutomen Technologies Pvt. Ltd.

Sept 2023 - April 2024

Machine Learning Engineer Intern

Gujarat, India

- Engineered a high-performance **RAG chatbot** using **LlamaIndex**, **LangChain**, and HuggingFace embeddings, boosting semantic search relevance by **30%** through **advanced indexing** with Qdrant and Pinecone, demonstrating proficiency in API integration and innovative model experimentation
- Optimized **multi-model pipeline** by **evaluating** LLMs, embeddings, and re-rankers, refining generation parameters to enhance output quality and consistency, aligning with generative AI tool experimentation
- Developed a **scalable Flask API** to connect UI with retrieval backends, facilitating seamless real-time interactions and smooth integration with client-side apps
- Identified and fixed model failures in RAG chatbot testing, boosting robustness via refined prompts and streamlined flow

NXON Pvt. Ltd.

May 2022 - June 2022

Machine Learning Engineer Intern

Gujarat, India

- Designed a CNN achieving over **99%** test accuracy on MNIST by **fine-tuning** convolutional and pooling layers
- Applied dropout regularization techniques, improving model generalization by **7%** and reducing overfitting risks
- Refined architecture to boost classification reliability, streamlining deployment in production-ready ML pipelines

PROJECTS

ClassTopper: AI-Powered Exam Preparation Platform

- Collaborated in a cross-functional team to build an exam prep platform with advanced document and video processing, enabling interactive learning from uploaded materials and **improving study efficiency** by **40%**
- Engineered a mind-mapping feature to visualize topic relationships, enhancing **content retention** by **60%** and enabling personalized knowledge structures; contributed to design through collaborative brainstorming and iterative refinement.
- Developed an **intelligent quiz system** through cross-functional collaboration and analytical problem-solving, creating tailored assessments that identify knowledge gaps and focus on key concepts, **improving performance** by **27%**

AI Voice Assistant

- Engineered a real-time **AI Voice Assistant** pipeline integrating Speech-to-Text (Whisper.cpp, AssemblyAI), Text-to-Text (Groq LLMs), and Text-to-Speech modules, optimizing end-to-end **latency** for seamless voice interactions
- Optimized large language model (LLM) performance by **reducing Time to First Token (TTFT) and inference latency**, enabling **sub-800ms response time** using speculative decoding and low-latency architectures
- Spearheaded the implementation of **WebRTC**-based voice framework with integrated Voice Activity Detection (**VAD**), End-of-Utterance (**EOU**) detection, and real-time Agent Turn Detection for dynamic multi-speaker handling

Brain tumor segmentation in MRI images using U-Net

- Constructed a **U-Net** model for pixel-wise segmentation on clinical MRI datasets, achieving **91%** segmentation accuracy
- Preprocessed DICOM images with intensity normalization and resizing to enhance model input quality
- Benchmarked model using IoU metrics, achieving a **15%** improvement over baseline CNN architectures

TECHNICAL SKILLS

Languages and Databases: Python, C++, Java, SQL, MySQL, MongoDB, Pinecone, Qdrant, Chroma

Frameworks and Libraries: PyTorch, TensorFlow, Keras, HuggingFace, Scikit-learn, NumPy, Pandas, Transformers

Generative AI: Large Language Models (LLMs), AI Agents, RAG, Prompt Engineering, Fine-tuning

Tools & DevOps: Git, GitHub, Bitbucket, Docker, Kubernetes, AWS ECS, GCP, FastAPI, Flask, Uvicorn

Data Science: Machine Learning, Deep Learning, Computer Vision, Natural Language Processing

CERTIFICATIONS AND ACHIEVEMENTS

Google Cloud Computing - Google Cloud Educational Badges (9 Badges)

AWS Academy Graduate - AWS Academy Machine Learning Foundations and AWS Academy Cloud Developing

Academic Achievement - Secured **2nd rank (Silver Medal)** among **180 students** in Bachelor of Technology

Team Lead, Data Science Club, CHARUSAT - Organized events and mentored junior students on data science careers, and managed a successful **6-day AWS Machine Learning workshop with 100+ participants**

Hackathon Achievement - Earned **2nd rank (Silver Medal)** in the 2023SolutionChallenge Hackathon at CHARUSAT