Tanvi Deshpande

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Education

Northeastern University 09/2024 – 05/2026
Master of Science in Computer Science (GPA: 3.5/4.0), Boston, Massachusetts

Somaiya Vidyavihar University 09/2020 – 05/2024
Bachelor of Technology in Computer Engineering (GPA: 8.74/10), Mumbai, India

Technical Skills

Generative AI: Agent Architectures, RAG, Prompt Engineering, Langchain, LlamaIndex, Vector Databases, Huggingface, Large Language Models (LLM), CTranslate2
ML & Deep Learning: , Computer Vision, NLP, TensorFlow, PyTorch, NLTK, NumPy, Pandas, Librosa
Programming: Python, Java, JavaScript, Go, SQL
Databases: MongoDB, MySQL, PostgreSQL
Cloud & DevOps: GCP, Git, Linux, Shell Scripting, Amazon Web Services(AWS), Terraform

Experience

Northeastern University 09/2024 – Present
Research Assistant - Software Engineer - AI/ML, Boston, Massachusetts

- Led a team of 4 researchers to design and deploy scalable multi-agent systems with task delegation and real-time monitoring, improving workflow efficiency by 40%.
- Engineered prompt optimization frameworks incorporating course guidelines, rubrics, and reference materials, increasing AI response accuracy by 35%.
- Automated rubric generation and batch grading with LlamaIndex, cutting grading time from 8+ hours to under 30 minutes for 200+ submissions.
- Developed enterprise-ready agent architectures integrating multiple generative AI models (GPT, Claude, Llama) and benchmarked AI-only, human-AI hybrid, and traditional grading across 100+ submissions.
- Contributed to full-stack development by building React-based front-end components and streamlined AI development pipelines, reducing project delivery timelines by 25%.

Capgemini 01/2024 – 06/2024
Data Analyst Intern, Mumbai, Maharashtra

- Developed a Scheduler Analyzer leveraging LangChain and LLaMA-3B to enable natural language queries over complex database logs, intelligently mapping keys to scheduling workflows and improving efficiency by 10%.
- Designed a Generative AI Assistant for aircraft engineers using LangChain and Mistral-8x7B, applying RAG over 1TB+ of technical data to surface relevant resolutions, reducing issue troubleshooting time by 25%.
- Built multiple proof-of-concept solutions across data analysis, generative AI, and robotics, demonstrating measurable value and supporting data-driven decision making for 10+ enterprise clients.
- Conducted market research on AI adoption in transportation and retail industries, delivering strategic pitch decks and ideating future use cases to inform client innovation roadmaps.

Projects

Automated Speech Feedback System | Whisper ASR, Praat/Parselmouth, Mistral-7B **09/2025**

- Built an end-to-end speech coaching pipeline analyzing clarity, pacing, cadence, and prosody from audio recordings using Whisper ASR, Praat, and Librosa.
- Engineered a multi-modal scoring rubric mapping 10+ acoustic features (pitch, jitter, shimmer, pause ratio, WPM, spectral centroid) to qualitative dimensions like clarity, tone, and confidence.
- Integrated a local LLM (Mistral-7B via Ollama) for personalized feedback and deployed an interactive Streamlit dashboard for audio upload, timeline visualization, rubric scoring, and JSON export.

URL Shortener | AWS, Docker, Go, Terraform, EC2, Distributed Systems, Gin Framework **09/2025**

- Developed and deployed a scalable backend service using Golang for URL shortening, capable of serving 500M+ requests/month deployed on AWS EC2 as Infrastructure as Code (IaC) using Terraform Docker, ensuring reproducible cloud deployment.

Wildfire Image Classification | PyTorch, TensorFlow/Keras, NumPy, OpenCV **01/2025**

- Built a binary wildfire detection model on RGB satellite imagery, implementing a from-scratch PyTorch CNN (hand-coded Conv/BN/Pooling) and a Keras baseline; achieved 98% vs 93% accuracy respectively.
- Developed a reproducible pipeline (128×128 inputs, data augmentation, precision/recall/F1, confusion matrices) demonstrating feasibility without multispectral/thermal bands.