DUSHYANT MAHAJAN

857-437-2831 • mahajan.d@northeastern.edu • linkedin.com/in/dushyant-mahajan
github.com/Dushyantm • Boston, MA

EDUCATION

Master of Science in Information Systems   *Sep 2022 - Dec 2024*
Northeastern University (GPA: 3.63)   Boston, MA

Bachelor of Engineering in Computer Engineering   *May 2015 - Oct 2020*
University of Mumbai   Mumbai, India

WORK EXPERIENCE

Data Scientist Intern | Raga AI   *Jan 2024 - July 2024*

- Co-developed the open-source framework Raga LLM Hub, enriching it with over **50 comprehensive tests** to **evaluate** large language models (LLMs) and establish critical **guardrails** for LLMs and Retrieval-Augmented Generation (RAG) applications, enhancing model evaluation accuracy
- Engineered the **"RAG Builder"**, a tool with drag-and-drop functionality that enables customizable RAG framework construction and optimization for specific use cases, **reducing development time** for custom RAG pipelines by **50%**
- Developed the observability tool RagaAI Catalyst to provide **trace recording** inside RAG applications, offering a **one-click deployable solution** that allows for fine-tuning and evaluation of LLM applications, **streamlining deployment processes**

Data Science Consultant | Raga AI   *May 2022 - Aug 2022*

- Performed research on the implementation of deep neural networks for **drift tracking** and **outlier detection** in large-scale datasets
- Designed a API pipeline for interactive data point visualizations and **clustering** of deep neural network (DNN) embeddings
- Leveraged Deepchecks, Alibi Detect, and Voxel51 libraries to **validate** and **enhance** deep learning models, detecting outliers, and visualizing predictions

Software Engineer | Askim Technologies   *Jan 2021 - May 2022*

- Successfully **launched** a startup idea that transformed traditional paper prescriptions into multimedia prescriptions into a product, selected from over 100s of applications across India for **pre-incubation** at Digital Impact Square, a TCS initiative
- Led the development of a multimedia prescription platform, creating a pipeline that processed high volumes of prescriptions, significantly improving clarity and reducing patient follow-up queries by **30%**
- Built and deployed a resilient, full-stack application on AWS using the **MERN** stack, optimized for **scalability** and **security** with multi-AZ architecture, HTTPS-enabled CRUD endpoints, and managed using **Pulumi**
- Streamlined development processes by integrating CI/CD practices with GitHub workflows, **automated integration testing**, and custom Amazon Machine Images(AMI) creation using Packer, significantly enhancing deployment efficiency

PUBLICATION

- **Dushyant M.** et al. (2024). Roux-lette at Discharge Me!: Reducing EHR (Electronic Health Record) Chart Burden with a Simple, Scalable, Clinician-Driven AI Approach. 23rd Workshop on Biomedical Natural Language Processing, pages 719 - 723, Bangkok, Thailand. **ACL** (Association for Computational Linguistics). https://aclanthology.org/2024.bionlp-1.63/

TECHNICAL SKILLS

Programming Languages and Frameworks: Python, Golang, PyTorch, TensorFlow
Cloud & Deployment Tools: AWS, Packer, Pulumi, GitHub Actions, Docker
LLM Frameworks: OpenAI, LangGraph, Langchain, LlamaIndex, Ollama, LangSmith
Databases: SQL, ChromaDB, Qdrant, FAISS, PostgreSQL, MongoDB

PROJECTS

U-Net Based Tumor Segmentation in Pre-Operative MRI Scans | k

- Preprocessed multimodal scans from 3D MRI brain tumor images from the BRATS2020 dataset composed of NifTI files (.nii.gz) with NiBabel library and used data augmentation techniques to increase diversity and size of dataset
- Developed a U-Net-based transformer model for tumor segmentation in pre-operative MRI scans using Dice Loss to achieve an average precision of 88.6% overlap on the test set

GPT-based Language Model for Custom Script Generation | 🔗

- Designed and built a custom text generation model from the ground up, using Transformer architecture with multi-head self-attention and feed-forward networks, inspired by the "Attention is All You Need" paper to grasp the core principles of LLMs.
- Trained the model to generate diverse scripts from various seed texts, demonstrating its adaptability and significantly enhancing the depth of storytelling across different genres.