Devam Sheth

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Experience

Data Science Analyst June. 2024 – Present
Mayo Clinic (AI & Informatics) *Phoenix, Arizona*
- Working on Vision-Language Models to leverage multi-modal data for improving medical diagnostic performance.
- Collaborated with different Deep Learning Research projects with the lab.
- Improved existing methodologies by communicating and incorporating insights from radiologists and clinicians.

Machine Learning Research Assistant Aug. 2023 – May 2024
Arizona State University,Wu Lab *Tempe, Arizona*
- Improved Brain MRI white matter segmentation with nn-Unet, achieving **0.65** mean dice score across 5 folds.
- Collaborated with partners such as the Department of Defense and Mayo Clinic on lab projects and reports.
- Engineered distributed training pipelines and custom data preprocessing for seamless multimodal training.
- Integrated LLMs improving AUC score by **8%** for Headache classification method, utilizing Multimodal models.
- Engineered prompts for clinical notes to enhance text-embeddings from GPT-2 and BERT encoders.
- Fine-tuned pre-trained CLIP models, resulting in a **10%** increase in classification performance on medical data.
- Actively participated in weekly team meetings to discuss project progress and brainstorm innovative solutions.

Machine Learning Engineer May 2023 – Aug 2023
Arrow Electronics Inc. (e-Infochips) *Ahmedabad, India*
- Developed and deployed computer vision models for object detection, improving product quality by **15%**.
- Optimized low-light enhancement models, reducing MACs by **82%** through Neural Architecture Search.
- Optimized deep learning models for real-time inference on edge devices with minimal latency.
- Leveraged Distillation, quantization and pruning techniques to reduce the model size and memory footprint.
- Integrated machine learning pipelines into existing software systems through cross-functional collaboration.

Machine Learning Research Assistant May 2021 – May 2022
Nirma University *Ahmedabad, India*
- Developed end-to-end pipeline for bearing fault classification achieving **98%** accuracy, utilizing EfficientNet CNNs and novel feature engineering techniques like converting vibration data to images and FFT.
- Implemented Autoencoders with Gaussian noise filters for robust denoising of vibration signals and explored transfer learning by fine-tuning pre-trained CNNs.

Technical Skills

Languages: Java, Python, C/C++, SQL (Postgres), JavaScript, Matlab, HTML/CSS, R, Bash
ML Frameworks: PyTorch, HuggingFace, Llama-Index, ONNX, Keras, TensorFlow, TensorRT
Developer Tools: Git, AWS, Google Cloud Platform, VS Code, PyCharm, Linux, Jira, Confluence
Libraries: Transformers, Albumentations, OpenCV, Scikit-learn, Pillow, Seaborn, Pandas, NumPy, Matplotlib, OpenAI

Education

Arizona State University Aug. 2022 – May 2024
Master of Science in Computer Science, ***GPA: 4.0/4.0*** *Tempe, Arizona*
Courses : Machine Learning, Natural Language Processing, Data Processing at Scale, Data Visualization

Nirma University July. 2018 – May 2022
Bachelor of Technology in Computer Engineering, Mechanical Engineering, ***GPA: 7.95/10.0*** *Ahmedabad, India*

Projects

Hallucination Evaluation | *LLMs, Hugging-Face, NLP, HPC Clusters, Git* Oct 2023
- Led a team in evaluating MLLMs like InstructBLIP and Open-Flamingo on hallucination detection and evaluation.
- Utilized HPC clusters (Slurm) for GPU-accelerated experiments in inferencing LLMs and MLLMs for evaluation.
- Developed an end-to-end pipeline covering CLIP-score filtering, Q&A generation with Llama, and MLLM output generation.
- Configured Python environments for seamless execution within the pipeline, ensuring compatibility and efficiency.

Visualization Dashboard | *Pandas, JavaScript, HTML, CSS, D3.js, UI/UX Design* March 2023
- Designed and developed an interactive data visualization system for easy analysis of complex spatio-temporal data.
- Preprocessed data and developed novel visualization approaches like a circular Ring Chart using Python and D3.js.
- Implemented interactive features, filters and clickable legend with D3.js and HTML for user-friendly data exploration.

Exoplanet Visualization and Clustering | *NumPy, Scikit-Learn, JavaScript, HTML, CSS* March 2023
- Created an innovative visualization dashboard to showcase NASA's Exoplanets dataset, enabling interactive exploration.
- Employed clustering algorithms to group **5k** exoplanets by distance, enhancing user engagement with filters and buttons.

Galaxy Classification | *Python, TensorFlow, Keras* May 2023
- Developed Galaxy Classifier with VGG-16, achieving **83%** accuracy (SDSS Dataset) and **78%** accuracy (Decals Dataset).
- Conducted ablation studies on pretrained models, preprocessing, and feature extraction to optimize accuracy and train time.

2D Heat Flow Solver Interface | *Algorithms, Matplotlib, Tkinter* May 2020
- Used Tkinter library to build a GUI using frames and labels. Developed python code for 2D Heat equation using Computational Fluid dynamics Algorithms.
- Used Matplotlib to create animation GIF adding each plot of output i.e., at each time step.

Achievements and Certificates

Invited to join IEEE Eta Kappa Nu's ASU Chapter (Honors Society of IEEE) in Fall 2023
Graduate Fellowship Scholarship awarded in Fall 2023 by Arizona State University.
Fundamentals of Deep Learning certification from NVIDIA.
Building Transformer-Based Natural Language Processing Applications certification from NVIDIA.