Prashanth Duggirala

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PROFESSIONAL SUMMARY

Senior Data Scientist with 5+ years of experience delivering scalable machine learning solutions. Proven track record of leading the development of cutting-edge AI systems, including large language models (LLMs) and computer vision applications. Expert in building and deploying foundational ML pipelines in fast-paced, cross-functional environments, with a focus on driving business impact and setting high standards for technical excellence.

EXPERIENCE

Leoforce Inc., Hyderabad — *Senior Data Scientist*

JUNE 2021 - PRESENT

- Led initiatives within a global, cross-functional team of 9 engineers across 2 time zones to deliver 3 scalable AI-based solutions over 12 months. Defined ML best practices and mentored 5 junior engineers, setting high standards for system design and model development
- Architected and developed advanced AI agents for a chat-based application, IRA, using Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), and intelligent agent workflows to automate sourcing, screening, and real-time candidate engagement—achieving 75% automation rate and reducing manual screening time by 50%.
- Engineered an end-to-end data pipeline processing 500K+ documents daily using modern NLP techniques to: design custom parsing software for unstructured job/resume data (web pages, PDFs) with 90% accuracy; train and deploy domain-adapted BERT architectures for NER achieving 92% F1-score to extract and index insights in Elasticsearch; and apply innovative LLM-based data augmentation improving system generalizability by 60%.
- Built scalable ML inference pipelines using Docker and Kubernetes (EKS) for efficient model deployment and management in production environments.
- Established a comprehensive MLOps framework for the entire model lifecycle, using MLflow for experiment tracking, OpenTelemetry for observability, and developing real-time performance monitoring dashboards with Grafana, Streamlit, and Appsmith.

University of California, Davis, CA — *Graduate ML Researcher*

OCTOBER 2019 - MARCH 2021

- *Multimodal Health Data Representation Learning:* Developed deep stacked autoencoder networks with progressive training techniques for unified representation learning from multimodal health data, achieving 82% classification accuracy.
- Implemented end-to-end framework using PyTorch to process heterogeneous health data modalities (clinical records, imaging, sensor data), creating unified embeddings for downstream diagnostic tasks.

PROJECTS

Text-Prompted Image Segmentation for Drywall Quality Assurance

- Developed and fine-tuned a lightweight, text-conditioned segmentation model (CLIPSeg) using a discriminative learning rate strategy to identify and segment drywall cracks and taped joints based on natural language prompts.
- Achieved an overall mIoU of 0.55 and a Pixel Accuracy of 0.94, successfully enabling zero-shot and referring expression segmentation for two distinct defect classes (crack polygons and joint bounding boxes) from a single model.
- Engineered a robust post-processing pipeline utilizing Gaussian Blur, Otsu's Binarization, and morphological operations to convert raw probability maps into clean, production-ready binary masks, demonstrating an average IoU improvement.

Generative Adversarial Framework for Eye Image Synthesis and Gaze Estimation

- Developed DCGANs for synthetic eye image generation, producing high-fidelity images that improved gaze estimation accuracy by 35%.
- Created custom evaluation framework using pre-trained classifier loss to quantify image realism and establish benchmarking methodology.
- Built a generative pipeline supporting multiple gaze directions and lighting conditions, reducing data collection requirements.

SKILLS

Machine Learning: LangChain, Agents SDK, DSPy, LLM, VLM, ViT, MLFlow, Python, PyTorch, HuggingFace, Pandas, Numpy, Copilot, OpenAI, Bedrock

Databases: Elastic, MongoDB, MySQL

Web: React, JavaScript, CSS, OAuth, Streamlit, Appsmith

DevOps: Git, Docker, Kubernetes, AWS, GitLab CICD, EC2, OpenSearch, EKS

EDUCATION

University of California, Davis— *M.S. Computer Science, 3.96*
SEPTEMBER 2021

Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram — *B.Tech. Computer Engineering, 8.92*
JULY 2019

PUBLICATIONS

Sidrah Liaqat, Chongruo Wu, **Prashanth Reddy Duggirala**, Sen-ching Samson Cheung, Chen-Nee Chuah, Sally Ozonoff, Gregory Young,

Predicting ASD diagnosis in children with synthetic and image-based eye gaze data,

Signal Processing: Image Communication, Volume 94, 2021, 116198, ISSN 0923-5965, https://doi.org/10.1016/j.image.2021.116198