PRANAV PARNERKAR

Los Angeles, CA, USA | 213-913-8046 | parnerka@usc.edu | linkedin.com/in/pranav-parnerkar

TECHNICAL SKILLS

Programming Languages: Python, SQL, C, C++, HTML, CSS, JavaScript
Python Libraries and Frameworks: Pandas, NumPy, Matplotlib, Seaborn, Scikit-Learn, Keras, TensorFlow, OpenCV, PyTorch, Flask, SciPy, NLTK, BeautifulSoup, Pillow, Huggingface
Miscellaneous: Data Science Pipeline (Cleansing, Wrangling, Visualization, Modeling, Interpretation), Statistics, Hypothesis Testing, Time Series Analysis, OOP, Excel, Git, Tableau, MongoDB, Power BI, Prompt Engineering, WordPress

EXPERIENCE

Machine Learning Research Intern May 2023-Present
DEVCOM US Army Research Laboratory, Los Angeles, CA, USA

- Built a gaze-based object detection pipeline with zero-shot models (Grounding DINO, OWL-ViT) to ascertain the subject of an individual's gaze within a real or virtual environment, achieving a testing accuracy of 90%.
- Programmed custom Python scripts using OpenCV to detect and classify April tag-bounded displays in an environment and created a post hoc visualizer for the pipeline.
- Showcased the system virtually at ARL's Summer Student Symposium and currently working on crafting a paper that delves into the technical intricacies of the system.

Data Science Intern March 2021-June 2021
Siemens Technology and Services Private Limited, Bangalore, KA, India

- Developed an automated approach for industrial leak detection and localization, incorporating LSTM autoencoders for node-level anomaly detection, Thompson sampling for optimal anomalous sensor selection, and Q-learning for shortest path recommendation. This initiative resulted in a 27% improvement over the previous system.
- Co-authored and presented a research paper on this work at Deep Learning DevCon 2021 Conference. Paper published in Lattice - The Machine Learning Journal by the Association of Data Scientists; ISSN 2582-8312.

Software Engineering Intern November 2020-December 2020
Ctrine Engineering Private Limited, Pune, MH, India

- Implemented an Over-The-Air software update delivery system for cars by leveraging the Uptane Framework in Python to curtail in-person servicing time by approximately 19% per car.
- Led configuration of director, image, and time servers to verify update metadata, ensuring secure software delivery to electronic control units via Raspberry Pi.

PROJECTS

Skin Lesion Classification using Deep Learning and Image Processing | Python, TensorFlow, PyTorch, Computer Vision

- Built image classifiers by extending and training transfer learning models (VGG19, Wide ResNet101, ResNet50, DenseNet121) for Harvard Dataverse's skin lesion dataset to differentiate seven types of skin lesions, including pre-cancerous actinic keratosis and malignant melanoma, with an AUC-PR score of 0.99 (VGG19).
- Co-authored and presented a research paper, comparing the performances of these models on this dataset at the 2020 3rd IEEE International Conference on Intelligent Sustainable Systems (ICISS); Electronic ISBN: 978-1-7281-7089-3.

Prompt-based Visual Story Generation | Generative AI, Text2Video/Audio Models, Ollama, Prompt Engineering, LLMs

- Utilized DAMO Vilab's Text2Video diffusion model and Meta AI's Text2Audio model (AudioCraft) synergistically with BERT-based sentence embedding and K-means clustering for topic segmentation to transform user-inputted story prompts into visual stories, yielding an average survey rating of 3.69/5 from user feedback.
- Leveraged Ollama to generate music context aware prompts (fed into AudioCraft) by configuring Mistral 7B with a system prompt.

Sentiment Analysis on Amazon Reviews | NLP, Word Embeddings, Text Classification, NLTK (Lemmatization, Stop Word Removal)

- Trained ML and DL models (SVM, Logistic Regression, Naïve Bayes, FNN, RNN, LSTM) using TF-IDF, Bag of Words, and Word2Vec features to classify textual reviews as positive or negative with an average F1 score of 84% across all models.

EDUCATION

University of Southern California, Los Angeles, CA, USA January 2023-December 2024
Master of Science in Computer Science GPA 3.75/4.0

MIT World Peace University, Pune, MH, India July 2018-July 2022
Bachelor of Technology in Computer Science and Engineering CGPA 9.58/10.0