Mohtashim Butt

24100238@lums.edu.pk | +92 306 4588419 | LinkedIn
Portfolio | GitHub

Projects

Geographically transferable DL model for urban greenspace segmentation — Bachelor's Thesis
Supervisor: Dr. Zubair Khalid (Ph.D. Australian National University) — *Aug. 2023 – Ongoing*

- Merged the greenspace polygons from GIS platforms using Python scripting as a basis for the training data and overlayed NDVI mask as a post-processing method.
- Fine-tuned ultralytics Yolov8 instance segmentation algorithm and trained it from scratch on four different versions of datasets prepared.| In-Progress Report

Ancient text and carving segmentation on petroglyphs via ViTs — Directed Research Project
Supervisor: Dr. Murtaza Taj (Ph.D. Queen Mary University of London) — *Sept. 2023 - Ongoing*

- Generated a rich dataset bank by cropping, annotating, pre-processing, and augmenting ancient South Asian rock art images and text.
- Scrutinized pre-existing transformer models like SAM and CLIP to ensure the semantic segmentation of the camouflaged carvings on the rocks.

Similarity Detection and Sentiment Analysis of Online Text — Machine Learning Project
Supervisor: Dr. Agha Ali Raza (Ph.D. Carnegie Mellon University) — *Nov. 2023 - Dec. 2023*

- Fine tuned sentence transformer (SBERT) architecture for text embedding generation for the specific use case and designed the pipeline for text similarity detection and the model's evaluation.
- Analyzed the sentiments and similarity of the Quora question pair dataset and classified it via Logistic Regression classifier | Code.

Lane detection model | ImageNet, Yolov7, OpenCV, TensorFlow — View Source Code
An algorithm to detect lanes for autonomous cars for traffic safety

- Designed an algorithm (using LaneNet and Yolov7) for a car to automatically detect Lanes and vehicles on the road, which will assist in autopilot.
- Developed a dynamic homography mechanism to display an orthographic top-view of the Lane.

Industry Experience

Technical Content Intern — Educative Inc.
Area: Research and Development — *June. 2023 - Aug. 2023*

- Conducted extensive research about the topics related to computer vision, computer graphics, and ML and curated around **58** quality articles.
- Worked closely with the senior Technical Content Engineers to set up docker files and push them to Educative's docker repository. | My profile.

Teaching Experience

Teaching Assistant — Computer Vision Fundamentals (CS-5310)
Instructor: Dr. Murtaza Taj — *Fall-2023*

- Helped the instructor of this graduate-level course by grading components, conducting office hours, delivering tutorials, making the programming assignments, and taking the lead in the graded final project.
- Revamped the course structure by including programming assignments incorporating Hugging Face and Roboflow use.

Skills

- **Languages** / **Frameworks:** C, C++, Python(w/ NumPy, sci-kit learn, pandas, Keras, TensorFlow, PyTorch, OpenCV, NLTK), MATLAB, TypeScript, React, HTML, CSS, SQL and no-SQL database, Git, Docker, Haskell, Proteus, Arduino, LLM.

Education

Lahore University of Management Sciences – BS Computer Sciences — Lahore, Pakistan
Relevant Courses: Computer Vision, Introduction to Artificial Intelligence, Machine Learning, Speech and Language Processing with Generative AI, Deep Learning — *Aug. 2020 – May 2024*