

Mohtashim Butt

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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 overlaid 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 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), MATLAB, TypeScript, React, SQL, HTML, CSS, 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