

Mohtashim Butt

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[Portfolio](#) | [GitHub](#)

INDUSTRY EXPERIENCE

Undergraduate Research Assistant

Center for Urban Informatics, Technology, and Policy

Geographically Transferable DL Model for Urban Greenspace Segmentation

Aug. 2023 – Ongoing

- Collected satellite imagery from [GEID](#), annotated them on LabelMe, and hosted on Roboflow.
- Fine-tuned Ultralytics YOLOv8 instance segmentation model, trained it from scratch, and overlaid NDVI mask as a post-processing technique.
- Automated stitching process of Islamabad's F-7 Sector's images with greenspace segmentation for visualization purposes. | [In-Progress Report](#)

Technical Content Intern

Educative Inc.

Area: Research and Development

June. 2023 – Sept. 2023

- Conducted extensive research about the topics related to computer vision, computer graphics, and machine learning and curated around **58** quality articles.
- Set up docker files for OpenCV python code, VPython, d3.js, Octave, and React to deploy the applications within Educative's online widget. | [My profile](#).

Research Intern

Centre for Water Informatics, and Technology

Low-cost multi-camera module for forest fire detection

May. 2023 – June. 2023

- Integrated four ESP-32 camera modules to develop a low-cost single unit for capturing a multi-directional (360°) view.
- Wrote scripts (in PHP and Python) to automate the process of sending captured images to a self-hosted site and retrieving them to the local PC.
- Fine-tuned a tiny-YOLOv5 model for forest fire detection from the retrieved images to trigger an alarm. | [Final Report](#)

PROJECTS

Semantic Segmentation of Ancient Text and Carving on Petroglyphs

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 (using Naïve Bayes classifier) and similarity (using Logistic Regression classifier) of the Quora question pair dataset. | [Source Code](#).

Lane Detection Model | LaneNet, YOLOv7, OpenCV, TensorFlow

Computer Vision Project

An algorithm to detect lanes for autonomous cars for traffic safety

Nov. 2022 – Jan. 2023

- Designed an algorithm for a car to automatically segment lanes (using LaneNet architecture) and detect vehicles on the road (using the YOLOv8 model), which will assist the car in autopilot.
- Developed a dynamic homography mechanism to display a real-time orthographic top-view of the Lane | [Source Code](#)

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 incorporating Hugging Face and Roboflow use.

SKILLS

- Languages / Frameworks:** C, C++, Python(w/ NumPy, sci-kit learn, pandas, Keras, TensorFlow, PyTorch, OpenCV, matplotlib, 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