

# Mohtashim Butt

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

## INDUSTRY EXPERIENCE

### 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 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](#).

### Low-cost multi-camera module for forest fire detection

WIT

Supervisor: [Dr. Talha Manzoor](#) (Ph.D. LUMS)

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

### Geographically Transferable DL Model for Urban Greenspace Segmentation

Bachelor's Thesis

Supervisor: [Dr. Zubair Khalid](#) (Ph.D. Australian National University)

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](#)

### 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 (using LaneNet and Yolov7) for a car to automatically segment lanes and detect vehicles on the road, which will assist in autopilot.
- Developed a dynamic homography mechanism to display an 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