Muhammad Umair

276 Main Street • Medford, MA, 02155 • 857-600-9589 • muhammad.umair@tufts.edu •
github.com/mumair01• linkedin.com/in/MUmair

EDUCATION

Tufts University School of Engineering Medford, MA

- **Major:** Bachelor of Science in Computer Science (BSCS) **Expected May 2021**
- **GPA:** 3.57, Dean's list for all Semester
- **Programming coursework:** Programming Languages, Algorithms, Data Structures, Assembly, Computation Theory
- **Programming Electives:** Machine Leaning, Cloud Computing, Artificial Intelligence, Database Systems, Game Design
- **In Progress:** Reinforcement Learning, Deep Neural Networks

RELATED EXPERIENCE

Vicarious Surgical ***Artificial Intelligence Intern*** **May 2020 – Present**

- Developed GUI application to perform camera calibration, real-time un-distortion, and detect localized distortion areas.
- Implemented ROS-2 Docker containers with Computer Vision algorithms as part of the AI pipeline.

Tufts Human Interaction Lab ***Lab Manager*** **Jan 2019 – Present**

- Manage interns working on TypeScript front-end projects and NLP Speech-to-text projects.
- Conduct Full-Stack interdisciplinary group-based research to apply Natural Language Processing (NLP), Machine Learning (ML), and Statistical Modelling to Cognitive Science.

Tufts Computer Science Dept. ***Teaching Assistant for Computational Design*** **Sept 2018 – Jan 2019**

- Led lab sections, graded assignments, and held office hours to help undergraduate students.

Tufts Human Interaction Lab ***Research Intern*** **May 2018 – Jan 2019**

- Introduced major changes to Conversation Analytics (CA) transcripts using Automatic Speech Recognition (ASR), audio signal processing, deep neural networks, and statistical models.

PROJECTS

Camera Calibration / ROS

- GUI Computer Vision app that estimate camera intrinsic / extrinsic parameters using any calibration pattern, and un-distort streams, with its design similar to the MVC design pattern.
- Re-developed using the ROS-2 framework as nodes to efficiently un-distort in real-time.

GAILbot

- Developed GAILbot: A specialized Speech to Text (STT) System able to produce Conversation Analytics (CA) transcripts, calculate speech rates, perform laughter analysis, and operate on multiple languages.
- **Umair, M.**, Mertens, J., Albert, S. & De Ruiter, J.P. (**In peer review**). Generating an Automated InitiaL Orthographic Transcript: GAILBot.

HICA Front-end

- Team project aimed to create a Git-like, website to store, edit, share, and play Conversation Analytics (CA) transcripts.
- Uses Node.js framework, Postgres database, and is designed as part of a larger pipeline.

Tufts HI-Lab Interactional Big-Data Center

- Integrated and programmed multiple modules to create an infrastructure project allowing data generation, automated transcription, storage, and real-time sharing and editing with a user-management system.

SKILLS

PROGRAMMING LANGUAGES	C, C++, Python, Postgres-SQL, JavaScript, R, MATLAB, HTML/CSS
SOFTWARE AND TOOLS	Ros-2, Docker, OpenCV, Jenkins, PyQt5 ,Unity, Linux, Git, Tensorflow, Postgres, IBM-Watson