Muhammad Umair

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EDUCATION

Tufts University **Sept. 2017 –May 2021 (Expected)**

Bachelor of Science in Computer Science / Minor in Cognitive and Brain Science

GPA: 3.6/4.0, Dean's list for all semesters

Relevant Courses: Machine Learning and Data Mining, Artificial Intelligence, Deep Neural Networks, Cloud Computing, Database Systems, Game Design, Software Engineering, Programming languages, Algorithms

TECHNICAL EXPERIENCE

Tufts Technology Services ***Student Employee*** **Oct. 2020 – Present**

- Develop a Security and Event Management System as an alternative to commercial software.

Tufts Human Interaction Lab ***Lab and Intern Manager*** **May 2018 – Present**

- Conduct full-stack interdisciplinary research to apply Natural Language Processing, Machine Learning, and statistical modelling techniques to natural conversation.
- Lead the lab internship program by working with multiple research assistants on speech-to-text systems.

Vicarious Surgical ***Artificial Intelligence Intern*** **May 2020 – Dec. 2020**

- Integrated tools with the Artificial Intelligence pipeline of an FDA breakthrough-design designated robot.
- Developed docker containers with ROS-2 to support computer vision algorithms as part of a larger pipeline.

Tufts University ***Teaching Assistant for Computational Design*** **Sept. 2018 – Jan 2019**

- Led lab sections, graded assignments, and provided students demonstrations of MATLAB basics.

SKILLS

PROGRAMMING LANGUAGES	Python • C • C++ • JavaScript • SQL • R • Racket • Smalltalk • TypeScript • MATLAB • VHDL
FRAMEWORKS AND TOOLS	ROS-2 • Flask • Docker • Jenkins • Hadoop • AWS • NodeJS • React • Django • Kubernetes • ElasticSearch • Kibana • Unity • Git • IntelliJ • Visual Studio
LIBRARIES	OpenCV • PyQt5 • Tensorflow • Keras • PyTorch • Sickit • Numpy • Pandas • Matplotlib • Tkinter • ElasticSearch • Scipy • Twisted

PROJECTS

NextGen. Alerts | *Python, JavaScript* ***Tufts Technology Services*** **Oct. 2020 – Present**

- Flask-based web-app that uses a RESTful API to interact with and provide real-time visualization of ElasticSearch clusters, integrated with a Postgres database, and a system to send alerts to users.

GailBot | *Python, C++, C* ***Tufts Human Interaction Lab*** **May 2018 – Present**

- Automated speech to text system that uses novel methods to transcribe para-linguistic features of conversation (prosody, intonation etc.) and has a full Graphical User Interface implemented using PyQt5.
- Presented it at *AMLAP 2020* and through: *GailBot: An Automated system for Jeffersonian transcription.*

G-Meta Plus | *Python* ***Tufts – Deep Neural Networks*** **Nov. 2020 – Jan. 2021**

- A modification of G-Meta, a model-agnostic meta-learning framework for fast adaptation of deep networks, to incorporate sub-graph relationships (such as distance) as an indicator of the global graph structure

Calibration App. | *Python, C++* ***Vicarious Surgical*** **May 2020 – Dec. 2020**

- GUI computer vision application that uses calibration patterns to estimate the intrinsic and extrinsic parameters of a camera system and remove image distortions in real-time.
- Integrated a C++ version of the tool into a dockerized machine as a Robotics Operating System (ROS) package.