MUHAMMAD AHMED SHAH

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EDUCATION

Carnegie Mellon University CGPA: 3.79/4.00 2017

- BSc. Computer Science
- Minor: Mathematics

WORK EXPERIENCE

Teaching Assistant Carnegie Mellon University, Doha, Qatar Aug'17-present

- Courses: Intro to Computer Systems (15-213) and Computer Networks (15-441)
- Responsibilities: Grading, managing logistics, delivering weekly recitations, answering student queries and facilitating Computer Science outreach programs.

Student Developer for CMU Sphinx Google Summer of Code May'17-Sep'17

- Developed Keras-based DNN training and testing modules for Sphinxtrain and Pocketsphinx. Integrating DNNs reduced the error rate of a simple 138-phoneme Pocketsphinx model by 20% *on the WSJ-0*.

Course Assistant Carnegie Mellon University, Doha, Qatar Jan'14-May'17

- Courses Assisted: (11-485) Basics of Deep Learning, (15-251) Great Theoretical Ideas in Computer Science, (15-112) Fundamentals of Programming, (15-384) Embedded Systems.
- Responsibilities: Grading and answering student queries.

Senior IT Helpdesk Associate Northwestern University, Doha, Qatar Sep'13-May'17

- Assisted students, faculty and staff with using university provided technology.
- Managed inventory of circulating and retired equipment, and deployment of new equipment.

English Language Instructor Reach Out To Asia, Doha, Qatar Jan'14-May'14

- Volunteered to teach basic English language to migrant laborers in Qatar.

PUBLICATIONS

M. A. Shah, B. Raj and K. A. Harras "**Inferring Room Semantics Using Acoustic Monitoring**" *2017 IEEE 27th International Workshop on Machine Learning for Signal Processing (MLSP)*, Tokyo, Japan, 2017, pp. 1-6. 2017

M. A. Shah and K. A. Harras. "**Hitting Three Birds With One System: A Voice-based CAPTCHA for The Modern User**" *2018 IEEE International Conference on Web Services (ICWS)*, San Francisco, CA, 2018 2018

HONORS AND AWARDS

University Honors	**College Honors**	**Winners**	**Winners**	**Best Technical App**
Carnegie Mellon University	School of Computer Science, Carnegie Mellon University	NeuroHack 2017	CMUQ Algorithmic Trading Competition 2017	CarnegieApps Hackathon 2016

PROJECTS

Detecting Genetic Precursor to Autism in Mice 2017

- Used regressions along with information theoretic techniques to identify features in brain scans of mice that were indicative of an autism causing genetic mutation, during **NeuroHack 2017** (organized at CMU and funded by Google).

Sherlock: A Crowdsourced System for Automatic Tagging Of Indoor Floorplans 2017

- Built a crowdsourced system that collects audio and visual data from smartphones (via an android app)
- Used machine learning techniques on data aggregated from multiple users over time to infer labels for rooms.
- The results have been **published in MLSP 2017**.

Algorithmic Trading Algorithm (in VBA) 2017

- Developed, in a team of 3, an automated trading algorithm, for the CMUQ Algorithmic Trading Competition, that incorporated first and second order price statistics to make investment decisions.
- My team was **runners-up in 2016** and the **winners in 2017**

Smart Text Editor (in Django/Python) 2016

- Developed a web-based context-aware text editor in a team of 2 for a course project using the Agile Methodology.
- The app proactively provides relevant information and writing suggestions based on what the user is currently typing.
- Used the Python Natural Language Toolkit for text processing, Django as the backend with Postgres and Redis.

Gesture Controlled Helicopter (using Arduino) 2016

- Reverse engineered the remote control of a toy helicopter to take input from a 9-DOF motion sensor attached to an Arduino for the final project of a course in Embedded Systems.

Buzzcast (in Python) 2016

- Developed a web-app in a team of 4, to display events on the map, with the real-time public sentiment around them.
- Wrote the social-media sentiment analysis module for the app.
- Won the **Best Technical Application award at CarnegieApps Hackathon'16**.

MapReduce: A Framework for Distributed Computation (in Java) 2015

- Developed a robust, scalable framework to distribute computation to multiple computing devices over the network for a course in Software Design and Construction.
- Used the framework to perform search and counting tasks in a distributed repository of documents.

Peer-to-Peer File Transfer System (in C) 2015

- Implemented a Bit-torrent like P2P file sharing system, for the Networks course.
- Used UDP for speed but added TCP sliding window for flow control and reliability.
- The project was tested for correctness and robustness on a simulated network with nodes containing partial files.