Muhammad Mubeen

Personal Information

Tel.	+92 333 565 1195
E-mail:	muhammad.mubeen@seecs.edu.pk — 14beemmubeen@gmail.com
Github:	github.com/mmubeen-6
LinkedIn:	linkedin.com/in/muhammad-mubeen-30096b126
Medium:	medium.com/@muhammadmubeen

Research Interests

Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Speech Processing, Signal Processing

Objectives

An experienced Machine Learning professional with excellent leadership and interpersonal skills. Seeking for the position of Artificial Intelligence/Machine Learning Engineer, offering 2 years hands-on experience utilizing various machine/deep learning techniques. Coming with proficiency in various ML/DL frameworks.

Academic and Professional Experience

OPTIMAL LAB, SEECS, NUST

Professional Developer **July 2018 – August, 2019**

Project : Object Detection and Categorization for Blind Using Deep Neural Learning

Worked on a deep learning based wearable product to assist visually impaired in their interacting with the environment.

•The system is able to detect and categorize various obstacles in front of the user and then find their relative distances from the user.
•The information was fed to the user in the form of an audio feedback.
•It uses highly optimized neural network for object detection on a Single Board Computer (SBC).
•This project was funded by IGNITE, Pakistan.

OPTIMAL Lab, SEECS, NUST

Researcher Assistant **August 2017 – June 2018**

Project : Forensic Speaker Verification Using Speech Signals

Worked on a deep learning based bio-metric verification system which uses speech signals of the user as input.

•Worked under the guidance of Dr. Ahmad Salman to create a Convolutional Neural Network to extract speaker specific information from a speech signal.
•Trained the CNN to extract speaker specific information (from speech) invariable to environment, noise and other factors.
•Obtained really good results on NIST based state of the art datasets.
•This was also my final year project (FYP).

AKSA SDS, Islamabad, ICT, Pakistan

Embedded Systems Intern **June 2017 – August 2017**

Project: Worked on an IoT product, that was able to count number of people present within a small surrounding area non-invasively.

•Worked on a Linux based IoT system named Raspberry Pi Model 3B.
•Implementation and coding of Person count algorithm using C++ Language.
•Used the respiratory sensor XeThru X2M200 for getting the surrounding information.

Education

National University of Sciences and Technology, Islamabad, Pakistan. **2014 – 2018**

Bachelors of Electrical Engineering
Focus Area : Signal Processing and Machine Learning
CGPA: 3.02/4.00

Punjab College, Blue Area, Islamabad, Pakistan. **2012 – 2014**

Studied Physics, Chemistry and Mathematics.
992/1100 Federal Board of Intermediate and Secondary Education(FBISE), Islamabad.

Professional and Academic Projects

- **Facial Recognition and Tracking System**
  Worked on a facial based bio-metric security system capable of detecting and identifying a person's face from the database. Later on, it also tracked the face within the specific vicinity as well. The project was implemented in python and used dlib along with Openface. It was developed for Acrux Technologies, Islamabad.
- **Physical activity classification using time-frequency signatures of motion artifacts**
  The project involved the classification of 5 different physical activities (coughing, reaching, walking, eating and rolling-on-bed). Different classifiers were used for training on features extracted from the data of 19 adult human subjects and then compared. It is actually the implementation of a paper. The implementation is available at my github.
- **Generating Adversarial Examples to Fool a Convolutional Neural Network**
  Implemented Fooling System for Image recognition by back-propagation on images to generate adversarial examples to fool state-of-the art CNNs like AlexNet. Project was submitted as a part of Computer Vision Course semester project. The implementation is available at my github along with a blog post on my medium page.
- **Panorama extraction from Multiple Views of a Scene**
  Creating a panorama from multiple images taken from camera with the same center, and using theory of single view geometry and image homography, a panorama of multiple images is created. Techniques like Discrete Linear Transform (DLT) and Meta-Heuristic optimizing were used. The implementation is available at my github
- **Artistic Style Transfer**
  The aim of this project was to transfer the style of a well know style image on to a normal (content) image using the VGG16 CNN. It is the implementation of the *A Neural Algorithm of Artistic Style*. This was part of my Digital Image Processing course.
- **Scalable Search Engine**
  A fully functional scalable search engine was implemented in python by scrapping a small portion of Wikipedia articles from web. The query then processed to return the top 10 search results based on keywords. This was part of our Data Structures and Algorithms course. It was project implementation of original paper of Google titled *The Anatomy of a Large-Scale Hypertextual Web Search Engine*.
- **Audio Equalizer**
  A fully functional 8 band audio equalizer was implemented using MATLAB. The equalizer is capable of processing any audio track at real time. Moreover, it provides different options including presets for popular genre of music. The implementation is available at my github.
- **Crick-It**
  An android application based IoT project that could measure the swing speed of a cricket bat. It used a Simblee micro-controller which uses BLE 4.0 for wireless transmission of data with the Smart phone. It used a machine learning based classifier trained on accelerometer and gyroscope data that whether the bat was being swung or not.
- **EZ-Transfer**
  A C# based application that could store your personnel documents on the cloud with password protection and would provide access of these documents to institutes for academic and various purposes after consent of the document owner.

Achievements and Awards

1 F.Sc-Among the top 1% student of my college (**2012 – 2014**).

2 Matriculation-Topper of my class (**2010 - 2012**).

Extra Curriculars

Notable extra curricular achievements.

- General Secretary - Computer Society of Pakistan, SEECS Chapter, NUST (**August 2017 - Present**).
- Director Logistics - Computer Society of Pakistan, SEECS-Chapter, NUST (**August 2016 - May 2017**).

Workshops and Seminar/Lectures

•**Workshop:** Conducted a workshop ***"Latest Trends in Machine Vision"*** at SEECS in which I delivered Lecture on latest advancements in Computer Vision and conducted the Lab Session

•**MS Lecture:** Conducted an MS lecture of 2 hours at SEECS, NUST on various object detection techniques in deep learning in the recent times

•Mentored Various projects at ***"Bootcamp on Artificial Intelligence & Machine Learning"*** that was conducted at SEECS, NUST.

•**LEGO Workshop:**: Taught students of 9^{th} Grade of *Scienta Vision College, Islamabad* basic programming concepts so that they could program on LEGO kits. I personally lead this project

Skills

Programming languages: C, C++, Python, MATLAB, Assembly, JAVA, Android, LaTeX
APIs: CAFFE, TensorFlow, PyTorch, Keras, OpenCV, Python Scientific Toolkit(numpy, pandas, scipy, matplotlib, sklearn, scikit-image etc.)
Single Board Computers: Raspberry Pi 3, ODROID XU4, Aaeon UP
Other: Code management (git), Issue tracking (GitHub), Cloud Computing(AWS, GCP), Linux administration, Microsoft Office.

Lab Management

•System administrator for 3 Linux Servers present in the Lab with 5 GPUs in total
•Guidance of FYP (final year project) students along with interns recruited for Summer Internship in Lab

Relevant University Courses

Course Title	Grade	Credits
Introduction to Programming	B+	1+1
Object Oriented Programming	B+	3+1
Data Structures and Algorithms	B+	3+1
Microprocessor Systems	B+	3+1
Digital Signal Processing	B	3+1
Multivariable and Vector Calculus	B+	3
Complex Variables and Transforms	B	3
Digital Image Processing	B+	3
Computer Vision	A	3

Massive Open Online Courses (MOOCs)

- Machine Learning by Andrew Ng (Coursera)
- Deep Learning Specialization (Coursera) *
- CS231N Convolutional Neural Networks by Stanford **
- CS224D Deep Learning for Natural Language Processing by Stanford *
- CS234 Reinforcement Learning by Stanford *
- fast.ai Practical Deep Learning for Coders **

*currently in progress **lectures only

Social Work

Eye Camp: Conducted an eye camp in collaboration with *Al-Shifa Trust Eye Hospital, Pakistan* at various schools in Tarnol, Islamabad