

Muhammad Osama Zeeshan

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OBJECTIVE

I am an experienced researcher and web developer with a demonstrated history of working in the industry and research institutes. My research interest focused on developing real-time, robust applications by blending computer vision and deep learning techniques. More specifically, I worked on the imagery data by extracting, localizing, and recognizing patterns/objects/content from the videos'.

CORE SKILLS

Languages: Perl, Python, .Net, Javascript, RESTful API, Html/CSS and Android Development (Java)

Focused Areas: Image Processing, Computer Vision, Machine Learning and Deep Learning

Libraries/APIs: TensorFlow, Keras, SciKit-Learn, Pandas, OpenCV, and RESTful Services

Tools: Bit Bucket, Jira, Source Tree, Gitlab, and Slack

Database: SQLite and PostgreSQL

EDUCATION

École de technologie supérieure ÉTS

PhD in System Engineering

Montreal, Canada

Jan-2022 -

Bahria University

Master of Science in Data Sciences

GPA: 3.44/4.0

Islamabad, Pakistan

Sep-2018 - Dec-2020

Air University

Bachelor of Science in Computer Sciences

GPA: 2.98/4.0

Islamabad, Pakistan

Sep-2010 - Sep-2014

TEACHING EXPERIENCE

Visiting Faculty at Bahria University

Conducted Android Development labs for undergraduates students

Islamabad, Pakistan

Sep, 2017 – Dec, 2018

Visiting Faculty at Air University

Conducted Computer Sciences course labs for undergraduates students

Islamabad, Pakistan

Sep, 2014 – Dec, 2015

Teaching Assistant at Air University

Course: Operating Systems

Islamabad, Pakistan

Jan, 2013 – Dec, 2013

RESEARCH EXPERIENCE

Bahria University

Machine Learning Researcher

Islamabad, Pakistan

Sep, 2017 – Jan, 2019

Working as a Researcher and Developer for the project called “Content Based Video Indexing and Retrieval” (CBVIR) which is funded by Ignite (National Technology Fund). Developed a solution to the problem of content based indexing and retrieval of video content, by using Deep Learning techniques (CNN, RNN, LSTM, GRU, BPTT, R-CNN, fast R-CNN, and Faster R-CNN) and Tensorflow as a framework with C# technology to develop a complete solution.

Air University

Image Processing Analyst

Islamabad, Pakistan

Jan, 2014 – Mar, 2015

I have worked on a research-based project funded by Ignite, and Higher Education Commission (HEC) called “Morphological Analysis of Microscopic Cell for Normal and Abnormal Classification”. I have involved in the development of the real-time analysis of the semen cells called the Computer-Aided Sperm Analysis tool and wrote an algorithm for the classification of human sperm cells.

PUBLICATIONS

Two-Step Fine-Tuned CNNs for Multi-label Classification of Children’s Drawings ([link](#))

Sep, 2021

Detection and Recognition of Cursive Text from Video Frames ([link](#)) Aug, 2020

Published in Neural Computing and Applications (NCAA) Springer Journal

Multi-Object Sketch Segmentation using Convolutional Object Detectors ([link](#)) May, 2019

Published in SPIE conference Proceedings and indexed in Ei Compendex and Scopus

Ligature Recognition in Urdu Caption Text using Deep Convolutional Neural Network ([link](#)) Nov, 2018

Published in IEEE 14th international conference on emerging technologies (Received Best Paper Award)

FELLOWSHIP

Awarded HEC fellowship in the last year of my bachelors' degree

Air University

Project: Morphological Analysis of Microscopic Cell for Normal and Abnormal Classification
2014

Jan, 2013 – Jan,

AWARDS AND HONOURS

Selected in Top 100 in Hello Tomorrow Global Submit

Le Centquatre Paris, France

Project: Brain Muscle Interface BMI

2019

2nd Position in Computer Project Exhibition and Competition

CEME Nust, Islamabad

Project: Morphological Analysis of Microscopic Cell for Normal and Abnormal Classification

2014

2nd Position in Excite Cup

CUST, Islamabad

Project: Morphological Analysis of Microscopic Cell for Normal and Abnormal Classification

2014

WORK EXPERIENCE

Jin Technologies

Islamabad, Pakistan

Senior Software Engineer

Jan, 2019 – Jan, 2022

- Worked on the integration of Zoho CMS into Oliver Marketing Agency web-based platform
- Added database level encryption using libsodium into the OMG system
- Write numerous APIs for the vast client-based of OMG including Unilever, Paypal, etc...
- Add support for SFTP server to be utilized by various OMG clients
- Worked on both user interface as well as the backend to add new features, resolve existing issues, and the time complexity of the system

Step Robotics

Islamabad, Pakistan

Android Developer and Image Processing Analyst

Aug, 2015 – Sep, 2017

- Wrote an algorithm for detecting sky and non-sky regions using image processing techniques
- Port the algorithm in C++ for efficiency and to be utilized in both mobile platforms (Android and IOS)
- Developed a 'Step Solar' android application on top of a sky detection algorithm
- Work with google maps, integration of Solmetric APIs, implementation of user interface and database design

PROJECT WORK

Brain Muscle Interface (BMI)

BMI based on the concepts of Mental Imagery, Brain Computer Interface (BCI) and Functional Electrical Stimulation (FES). BMI consists of an input unit which consists of an EEG device. The patients are asked to imagine a movement which they wish to perform (known as Mental Imagery), which is recorded as a specific waveform for example for the flexion of a wrist. Similarly, another movement is recorded as an opposite movement for example extension of the wrist. These two waveforms are coded as commands and fed to a system which then transforms it into an output signal. This output signal is then fed to an EMS (Electronic Muscle Stimulator) which feeds the output to muscles, and a person's muscle contracts just by imagining the movement i.e. by creating a mental image.

Content-Based Video Indexing and Retrieval

There has been a tremendous increase in the amount of digital multimedia data, especially the video content, both in the form of video archives and live streams. A key factor responsible for this enormous increase is the availability of low-cost smart phones equipped with cameras. With such huge collections of data, there is a need to have efficient as well as effective retrieval techniques allowing users retrieve the desired content. Traditionally, videos are mostly stored with user assigned annotations or keywords which are called tags. When a content is to be searched, a keyword provided as query is matched with these tags to retrieve the relevant content. The assigned tags, naturally, cannot encompass the rich video content leading to a constrained retrieval.

Multi-Object Sketch Segmentation Using Convolutional Object Detectors

Segmentation and recognition of constituent shapes is a key preliminary step in any automated sketch analysis and interpretation system. Due to high degree of deformations in hand drawn sketches, detection of a particular shape becomes extremely challenging, especially in a cluttered multi-object sample. I have developed the system using convolutional object detectors on (i.e. Faster R-CNNs, SSDs and R-FCNs) for the detection and segmentation of hand drawn shapes from offline samples of a neuropsychological drawing test i.e. Bender Gestalt Test (BGT).

Morphological Analysis of Microscopic Cells for Normal and Abnormal Classification

Computerized semen analysis tool which used to analyze naturally immobilized microscopic cells and generate automatic tests without any manual techniques required. I have successfully developed the system using image processing and machine learning techniques to recognize the morphological attributes of the semen cells (head, mid-piece (neck), and tail) that contain the size and shape of the cell. The final application was a desktop application based on the .NET framework.

CERTIFICATIONS

Neural Networks and Deep Learning

Oct, 2019

Completed the online course from Coursera deeplearning.ai by Andrew
([click here to see the certificate](#))

Improving Deep Neural Networks: Hyper-parameter tuning, Regularization and Optimization

Oct, 2019

Completed the online course from Coursera deeplearning.ai by Andrew
([click here to see the certificate](#))

Machine Learning

Jan, 2014

Completed the online course from Coursera deeplearning.ai by Andrew