

# M. Shahzaib Waseem

## Education

2016–2020 **National University of Sciences and Technology (NUST), SEECS, Pakistan**

- World University Ranking 2020: 355 (QS Ranking)

- Top 50 under 50 Ranking 2020: 41 (QS Ranking)

Bachelors of Science, *Computer Science*

CGPA: 3.39/4.00

Final Year Thesis: "Generation and Analysis of Art using Machine Learning" which generates novel art images, predominantly focused on religious art.

Under the supervision of Dr. Syed Taha Ali, Assistant Professor, NUST.

## Experience

July 2020 - **Software Engineer, Cognitive Healthcare International, ISLAMABAD, Pakistan**

Present Cognitive Healthcare International is a company focused towards providing healthcare solutions to patients in the friendly setting of their homes.

2018 - 2020 **Research Intern, Cognet Lab, NUST, ISLAMABAD, Pakistan**

Worked on Generative Adversarial Networks (GANs) for my Final Year Thesis in this lab. The Project is called "Generation and Analysis of Art using Machine Learning".

July - Sep **Research Intern, Furnwish, CAIRO, Egypt**

2019 Furnwish is a tech company, based in Egypt, which uses AI and AR for making tools for the Furniture Industry.

Worked on a computer vision research project with the goal of converting 2-D image(s) to 3-D models.

June - Sep **Research Intern, TUKL Research Center, NUST, ISLAMABAD, Pakistan**

2018 Worked there on a Chatbot Project. This Chatbot was for aarz.pk, a company which deals with real estate.

## Projects

2020 **Generation of Art using Machine Learning, GitHub Link, DEMO VIDEO, Bachelors' Thesis**

Novel art generation, with focus on religious art, using different versions of Generative Adversarial Networks (GANs) implemented with various GAN-optimization techniques. Various novel techniques such as "glitching" and "watermarking" were used to make it easier for the low dimensional GAN to pick the trends out of the low resolution images.

**Tools used:** Python3, Tensorflow 2.0, Keras, OpenCV, PIL/Pillow, Beautiful Soup, other Python Libraries.

2019 **3-D model generation from 2-D image(s), Furnwish**

A Computer Vision Research Project using PyTorch. 3-D models of furniture pieces were generated out of 2-D image(s) of the furniture piece, with the main end goal of helping store users to boost their online presence as the end-users, customers, would be able to see exactly how the piece of furniture would look in their living space using an iOS app equipped with AR-Kit.

**Tools used:** Python3, PyTorch, OpenCV, other Python Libraries.

**Ship Detector using Aerial images, GitHub Link**

Ship detection from a dataset consisting of aerial images. Image processing techniques like Binarization, Histogram Equalization, Unsharpening and Smoothing (using different kernels and median Smoothing) were employed which yielded better results and the processed images were tested on UNET and VGG models.

**Tools used:** Python3, Tensorflow1.0, Keras1.0, OpenCV, other Python Libraries.

### **CommBadger**, [GitHub Link](#), Group Project

Stocks predictions using Sentiment analysis with data streams coming from Twitter (using PyTweep) Stock prices and News articles. This tool recommends users what stocks are hot and what should the user buy.

**Tools used:** Python3, Tensorflow1.0, Keras1.0, Pickle, MongoDB, Tkinter, Yahoo APIs, Tweepy, others.

### 2018 **Wikipedia Search Engine**, [GitHub Link](#)

Forward indexes words from a wikipedia .xml dump file and serializes the entries after pre-processing the data and then in the end allows the user to search the dump files in real time.

**Tools used:** Python3, Pickle, Socket, ElementTree XML API, other Python Libraries.

- Programming Language used: Python
- This used to forward index the entries in an Wikipedia Dump File (.xml)
- The entries were serialized using Pickle
- Then the serialized files were searched for a string provided by the user

## **Skills & Abilities**

- Programming Languages
  - Python, C/C++, Java, JavaScript, SQL, PHP and Cuda. [GitHub](#) .
  - Basic knowledge of Matlab and Octave for **Numerical Analysis and Modeling** .
- Machine Learning
  - Worked on Deep Learning Frameworks like Tensorflow, Keras and PyTorch.
  - I have also worked with NumPy, OpenCV and PIL/Pillow.
- Database
  - Worked on MySQL ([EduMeet](#) ), SQLite ([School Ranking System](#) ), MongoDB ([Comm-Badger](#) ) and MS Access.
- Operating Systems
  - Comfortable working in Windows and Linux.
  - Know basic working of **Pthreads and Pintos** .
- Hardware
  - I have hands-on Experience with Arduino and NodeMCU ESP8266 ([Garduino](#) ).
- Mobile Development
  - I have created some very basic Android Apps on Android Studio in Kotlin and Java.
  - Also worked with Unity on a basic android game.
- Others
  - Microsoft Office Specialist. See Certificates: **Word** , **Powerpoint** , **Excel** .
  - Basic working experience with  $\text{\LaTeX}$ .
  - Working experience with version control regardless of the platform.

## **E-Learning**

- edX
  - Introduction to Computer Science, CS50, HARVARD
- Coursera
  - Machine Learning, STANFORD, [See Certificate](#) .
  - Deep Learning Specialization, DEEPLARNING.AI, Certifications: **NNs & DL** , **Improving DNNs** , **Structuring ML Projects** , **CNNs** .
  - Mathematics for Machine Learning, Multivariate Calculus, IMPERIAL COLLEGE LONDON
  - Algorithms, Part 1, PRINCETON
- Uncertified
  - Convolutional Neural Networks, CS231n, STANFORD
  - Practical Programming in C, 6.087, MIT
  - Command Line, CODECADEMY
  - Microcontroller one day Crash Course, NUST

## **Achievements**

- 2019 Accepted for an internship at Furnwish, Cairo, Egypt
- 2017, 2020 NUST Merit Based Scholarship
- 2017, 2020 Awarded Dean's List
- 2014-2016 Merit Scholarship awarded by Punjab Group of Colleges

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## References

**Assistant Professor, NUST, Islamabad**  
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**Assistant Professor, NUST, Islamabad**  
Dr. Arsalan Ahmad  
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**CTO and Co-Founder, Furnwish, Cairo**  
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