

# Zaryab Muhammad Akram

## Curriculum Vitae

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### Education

2017 – Present **Bachelors of Science in Computer Science.**

NUST (National University of Sciences and Technology), Islamabad, Pakistan  
**CGPA** – 3.96/4.0 (99%) **Major GPA** – 4.00/4.0

Major Courses: Fundamentals of Computer Programming, Object-oriented Programming, Data Structures and Algorithms, Discrete Mathematics, Calculus, Probability and Statistics, Linear Algebra, Operating Systems, Computer Networks, Artificial Intelligence, Digital Image Processing and Numerical Analysis

### Experience

September 2019 – **Research Assistant**, TUKL-NUST R&D Center, *NUST*, Pakistan.

Present Contributing in the research project Information Retrieval from Court Room Records using *Case Based Reasoning (CBR)* funded by Higher Education Commission, Pakistan

- Data Scraping and Cleaning for each court room
- Data Analysis to determine distinct case and judgment formats and relevant information in them and organizing them
- Implementing *Case Retrieval* step of CBR Cycle

**Tools Used:** *OCR, BeautifulSoup, Pandas, Misc. Python libraries*

June 2019 – **Machine Learning Intern**, VisionX Technologies, Islamabad.

August 2019 Designing a suitable Architecture and Model to extract useful information from courier package label images using OCR followed by information extraction techniques, including following subtasks:

- Evaluating and comparing the performance of different Faster R-CNN and Mask R-CNN Models for sender/ receiver *Region Detection* in label images
- Performing *Named Entity Recognition* on extracted text using a CNN-BiLSTM-CRF model with BIOES tagging scheme

**Tools Used:** *Tensorflow, Keras, OpenCV, Google OCR, Misc. Python libraries*

July 2018 – **Web Developer**, Nausal Technologies, Islamabad.

August 2018 Working as an active member of the development team to translate Photoshop designs into responsive webpages

**Tools Used:** *HTML5, CSS3, Bootstrap, WordPress*

### Projects

#### ◦ Document Localization in Natural Images

Precisely localizing a document in natural images using *Deep Convolutional Neural Networks* on ICDAR 2015 SmartDoc Competition 1 dataset

**Tools Used:** *Tensorflow, Keras, Pandas, Misc. Python libraries*

#### ◦ Search Engine

A scalable hypertextual Web Search Engine on the *Simple Wikipedia Data Dump* without using any external index, based on the research paper *The Anatomy of a Large-Scale Hypertextual Web Search Engine*. Single and Multiple word search queries on Wikipedia Corpus are answered in real time.

**Tools Used:** *Python*

- **HTTP Downloader**

A tool that uses basic socket programming to download data from servers using multiple parallel HTTP connections with the functionality to resume broken or incomplete downloads.

**Tools Used:** *Python, Threading, Socket Package*

- **File Management System**

A Client-Server Architecture based multi-user friendly File Management System with Reader-Writer Problem's solution implemented using process synchronization.

**Tools Used:** *Python, Multiprocessing, Synchronization*

- **Flappy Bird Clone**

A desktop version of the well-known android application *Flappy Bird*, implemented using Object-Oriented Programming Paradigm.

**Tools Used:** *Java, LibGDX*

- **PPM Editor**

A simple command line program to edit and manipulate Portable Pixmap Format (PPM) Images, with a focus on file handling and dynamic memory management.

**Tools Used:** *C*

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## Technical and Personal Skills

- **Programming Languages:** Hands-on experience in *Python, C/C++* and *Java* with an ability to shift to any programming language or framework when needed
- **Machine Learning Frameworks:** Python combined with *NumPy, Matplotlib* and *Pandas* for prototyping models. Experience in *Tensorflow, Keras* and *Pytorch*
- Hands on experience in data processing and visualization in Python libraries
- **Web Frameworks:** Comfortable working with HTML, CSS, Bootstrap, Javascript, jQuery, PHP, React/ React-Native, NodeJS and WordPress
- Basic knowledge of LaTeX
- Intermediate knowledge of version control using Git
- Certified Microsoft Office (Word, Excel, PowerPoint) Expert

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## Awards

- NUST merit scholarship for all semesters passed up till now
- Dean's list for high achievers for all semesters (selected for High Achievers Ceremony)

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## Self Paced Work

- Introduction to Computer Science, CS50 *Harvard*
- Object Oriented Programming in Java *UC San Diego*
- Introduction to Algorithms *MIT*
- Machine Learning *Stanford*
- Deep Learning Specialization *Coursera*
  - Neural Networks and Deep Learning
  - Improving Deep Neural Networks
  - Structuring Machine Learning Projects
  - Convolutional Neural Networks
  - Sequence Models