



Muhammad Azaz Farooq

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ABOUT ME

An enthusiastic Computer Engineer and early-stage researcher having research interest in Data Science (DS), Artificial Intelligence (AI), Natural Language Processing (NLP), Machine Learning (ML), Deep Learning (DL), Industry 4.0, edge and cloud computing.

EDUCATION AND TRAINING

01/11/2022 – CURRENT Bologna, Italy

PHD IN COMPUTER SCIENCE & ENGINEERING University of Bologna

The main goal of the doctorate research is to build an AI based anomaly detection service that would be distributed in different industrial environment exploiting the capabilities of edge and cloud computing.

Website <https://www.unibo.it/en> |

Field of study Information and Communication Technologies (ICTs) not further defined , Software and applications development and analysis

11/09/2019 – 04/06/2022 Shenyang, China

MASTER OF ENGINEERING IN COMPUTER APPLICATION TECHNOLOGY Shenyang Aerospace University (SAU), China

- Supervised by the dean of the School of Computer Science Prof. Guodong Zhang (zhanggd@sau.edu.cn)
- Successfully passed the Master's defense on 5th June 2022.
- The research area is Machine Learning, Deep Learning, Medical Image Analysis.
- Learn Scientific Document writing, ML & DL based tools for experimental validations.
- Master thesis involve the benchmark model attention U-net modified version to detect and segment the breast tumor from Ultrasound images dataset.

Website <https://en.sau.edu.cn/> | **Field of study** Machine Learning (ML) | Deep Learning (DL) | **Final grade** B/84% |

Thesis Breast Cancer Detection from Ultrasound Images Using Attention U-Nets Models

29/08/2011 – 24/12/2015 Bahawalpur, Pakistan

BACHELORS OF SCIENCE IN COMPUTER ENGINEERING The Islamia University of Bahawalpur (IUB), Pakistan

- It was a researched-based final-year project.
- Worked on OpenCV, Visual Studio, and C++.
- This research involved deployment of CV algorithms and DIP techniques (Object Detection, Edge Detection, Foreground and Background Segmentation, Morphological operations etc.)
- The project received the appreciation award in the open house of the University

Website <https://www.iub.edu.pk/> | **Field of study** Digital Image Processing (DIP) | Computer Vision (CV) | **Final grade** B/85% |

Thesis Real-time People Detection and Counting in Surveillance Applications

● WORK EXPERIENCE

28/02/2020 – 03/06/2022 Shenyang, China

RESEARCH ASSISTANT IN UNIVERSITY SHENYANG AEROSPACE UNIVERSITY

- Research and develop different Machine Learning (ML) and Deep Learning (DL) algorithms for medical imaging problems.
- Expertise in Python, ML, DL, and their libraries (NumPy, Pandas, Sci-kit learn, Matplotlib, Seaborn etc.).
- Worked on Python's advance framework (Tensor flow , Keras).
- Published research papers in the Scopus, Web of Science journal.
- The main contribution to the research is the addition of feature maps and saliency in the Attention U-Net model
- 5 additional Attention blocks are added in the original U-net model to extract the more specific details

02/02/2018 – 31/08/2019 Islamabad, Pakistan

LAB ENGINEER NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY (NUST)

- Conduct labs of computer science and software engineering subjects like OOP, computer vision, Advance programming, machine learning , and compiler construction etc.
- In charge of Research and the Innovation lab.
- Demonstrator of final year projects of Undergrad students to foreign universities visits.
- Making exams and prepare the Grades.
- Worked on Learning Management System (LMS) and Course Management System (CMS).

01/07/2016 – 31/01/2017 Lahore, Pakistan

ASSISTANT OFFICER (ERP) WILSHIRE LABORATORIES PVT. LTD

- Worked on Oracle Forms and Reports software.
- Build many types of analytical and complex reports and forms in a team environment.
- Develop many new modules in already implemented customized oracle database software like Quality Control, HRM, and Assets,

● PUBLICATIONS

2023

[Alzr-Net: A Novel Approach to Detect Alzheimer Disease](#)

Mehmood, M. H., Hassan, F., Rahman, A. U., Rauf, A., & Farooq, M. A. (2023, May). Alzr-Net: A Novel Approach to Detect Alzheimer Disease. In *2023 International Conference on Communication, Computing and Digital Systems (C-CODE)* (pp. 1-6). IEEE.

2022

[Automatic Heart Segmentation Based On Convolutional Networks Using Attention Mechanism](#)

Guodong Zhang, Yu Liu, Wei Guo, Wenjun Tan, Zhaoxuan Gong, and Muhammad Azaz Farooq "Automatic heart segmentation based on convolutional networks using attention mechanism", Proc. SPIE 12342, Fourteenth International Conference on Digital Image Processing (ICDIP 2022), 123421I (12 October 2022); <https://doi.org/10.1117/12.2643378>

2022

[Breast Cancer Detection from Ultrasound Images using Attention U-Nets Model](#)

Muhammad Azaz Farooq , Zhao Xuan Gong, Yu Liu, Muhammad Zubair, Arslan Manzoor Guodong Zhang*, "Breast Cancer Detection from Ultrasound Images using Attention U- Nets Model" in 14th ICDIP, China , March 2022

● CONFERENCES AND SEMINARS

20/05/2022 – 23/05/2022 China University of GeoSciences, Wuhan, China

14th International Conference on Digital Image Processing (ICDIP 2022)

- I presented my research paper at 14th ICDIP 2022 conference .
- The title of my paper is " Breast Cancer Detection from Ultrasound Images Using Attention UNETs Model".
- I won the **Best Presentation** Award.

Link <http://www.icdip.org/>

● CERTIFICATIONS

01/06/2020 – 31/07/2020

Structuring Machine Learning Projects

- Certified from Coursera as Machine Learning Project Architect.
- Planning and deployment of Machine Learning projects are the core objective of this certification.

Link coursera.org/verify/BYRWRSTG27GW

01/06/2020 – 31/07/2020

Neural Networks and Deep Learning

- Learn a course from deeplearnin.ai specialized course.
- The basics of neural networks and deep learning are taught in this course.
- Andrew Ng (Father of Deep Learning) was the instructor of this course.

Link coursera.org/verify/48UWEP75XJNV

● SKILLS

Soft Skills

Research report writing | Manuscript writing | Team Management | Project Management | Independent Research Management | Presentation

Version Control and OS

Windows | Linux (Ubuntu), Git | Fork

Research Software and Skills

Data Science | Machine Learning | Deep Learning | Python | C++ | SQL | Data Analysis | Artificial Intelligence | Computer Vision | Medical Image Analysis | Digital Image Processing | NLP | Multiple Eye Tracking | HCI | MATLAB | Jupyter Notebook | VsCode | Exploratory Data Analysis

Python's Libraries skills

Numpy | Pandas | Matplotlib | Seaborn | Sci-kit learn | Keras | Tensorflow | Pytorch

● HONOURS AND AWARDS

01/11/2022

Italian Government Scholarship (PNRR) – University of Bologna

A fully funded scholarship funded by the European Union Commission through the PNRR Initiative for doctorate studies.

01/09/2019

Chinese Government Scholarship – Chinese Scholarship Council (CSC)

- I have been awarded a fully-funded Chinese government scholarship for the session 2019-2022 for my Master's studies.
- Learn research in a competitive and multi-cultural environment.
- Able to learn Chinese till HSK-4 level.

● RECOMMENDATIONS

Dr. Prof. Paolo Bellavista Professor

Department of Computer Systems and Engineering (DISI), UNIBO, Bologna, Italy

Email paolo.bellavista@unibo.it

Link <https://www.unibo.it/sitoweb/paolo.bellavista>

Dr. Zhang Guodong Professor, Dean

School of Computer Science, Shenyang Aerospace University, Shenyang, China

Email zhanggd@sau.edu.cn