Rabeea Jaffari

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Experienced Software Engineer skilled in AI, Data Science, software development, and software engineering seeking a challenging role to apply expertise in AI, programming languages, system architecture, and algorithm design for driving innovation and delivering exceptional software solutions.

Work Experience

Nov 2022 – Present
Jamshoro, Pakistan

Assistant Professor – Mehran University of Engineering & Technology

Main activities and responsibilities:

Teaching

- *Bachelors: Software Design and Architecture; Database Systems; Software Construction and Development*
- *Masters: Semantic Web; Advanced Software System Architectures*
- *Ph.D.: Semantic Software Engineering*

Research: Undergraduate (FYPs) and Postgraduate (M.E & Ph.D.) Research

Projects Supervised

- *Development of Optimized Deep Segmentation Framework for Diagnosis of Pneumonia through X-ray Imaging, Ph.D. Research (Python)*
- *Leveraging AI for Exploring Growth and Sustainability Dynamics in Pakistani Women-Owned Tech Startups, Master of Engineering (Python)*
- *Development of Framework for Location-Based Messaging with Augmented Reality, Master of Engineering (React JS)*
- *Mobile Legends: Bang Bang – Win Rate Prediction using Hero Roles and Team Recommendation, Master of Engineering (Python)*
- *PowerPlan Pakistan, Bachelors FYP (Flutter)*
- *AI-Powered Dental Caries Detection, Bachelors FYP (Python)*
- *RBP: Revolutionizing Brand Promotion via Predictive Analytics & Forecasting, Bachelors FYP (NodeJS)*
- *Deep Learning Framework for Fetal Anatomical Planes Prediction from Ultrasound Images, Bachelors FYP (Python)*
- *Blockchain based Loan Management System Bachelors FYP (Node JS)*

Tools and Technologies: Python, Java, SQL, SPARQL, Git, NodeJS
Curriculum design and development for undergraduate and postgraduate degree programs
Management: FYP, Business Incubation, Research Grant committees, and IEEE Women in Engineering (WiE) Faculty Advisor

July 2019 – Nov 2022
Sri Iskandar, Malaysia

Graduate Assistant – Universiti Teknologi PETRONAS

Main activities and responsibilities:

Research

- *Optimized Deep Learning Model for Thin Objects' Detection (Deep Learning - Python)*

Practical Lessons

- *Structured Algorithm and Programming (Python and C++)*

Mar 2018 – Jul 2019
Jamshoro, Pakistan

Lecturer – Mehran University of Engineering & Technology

Main activities and responsibilities:

Projects Supervised

- *VEDZA: Kinect based Virtual Shopping Assistant, Bachelors FYP (C#)*

Theory & Practical Lessons

- *Web Engineering; Distributed Computing; Data Warehousing and Mining*
- *Tools and Technologies: Azure, C#, PHP, HTML, CSS, Java, SQLServer, Teradata*

Jul 2016 – Jan 2018
Jamshoro, Pakistan

Teaching Assistant – Mehran University of Engineering & Technology

Main activities and responsibilities:

Undergraduate Theory & Practical Lessons

- *Microprocessor Technologies; Computer Networks and Management*
- *Tools: Assembly Language, PacketTracer Simulator*

Education

Jul 2019 – Nov 2022

Ph.D. Information Technology (AI) **CGPA: N/A**

Universiti Teknologi PETRONAS, Malaysia

Awards: Graduate on Time (GoT)

Thesis: Optimized Deep Learning Model for Thin Objects' Detection

- *TPose (T: thin image object), an optimized DL model for detecting thin image objects via key points-based top-down pose estimation method validated and benchmarked on electrical power lines, and road lane line case studies*
- *Novel Focal Phi Loss (FPL) function for handling class imbalance issue in DL detectors for thin object's detection*
  (Github: https://github.com/rubeea/focal_phi_loss_mmsegmentation)
- *Implemented using Python and High-Performance Computing (HPC) Tech*

Mar 2016 – Jun 2018

Masters of Software Engineering **CGPA: 4.00/4.00**

Mehran University of Engineering & Technology, Pakistan

Thesis: Framework of Business Intelligence (BI) Systems for Infrastructure Design and Management

- *Recommender Systems, Supervised ML Models, BI Correlations*
- *Implemented using Azure and C#*

Jan 2012 – Dec 2015

Bachelors of Software Engineering **CGPA: 4.00/4.00**

Mehran University of Engineering & Technology, Pakistan

Awards: Distinction (Gold medalist)

Thesis: Evolution of MUET Online Examination System in Light of Academic ERP

Projects

2022-2024

Towards AI in CO_2 Electrochemical Reduction (CO_2ER) Catalysis

- *Synopsis: AI-based framework to predict the optimal catalyst for the CO_2ER reaction via electronic and geometric properties of Ionic Liquids, implemented using Supervised ML models and Graph NN.*
- *Duties: Research Grant Writing, Project Manager, AI Engineer*

2023-2024

Leveraging ML for Predicting Marginal Field Oil Well Production Using Electrical Submersible Pump (ESP) Operations Data

- *Synopsis: ML-based framework to forecast the total oil production from*

ESP well data, implemented using Supervised ML models and Time series forecasting via Prophet API.

- *Duties: AI Engineer*

2021-2022 **A Novel Image based Deep Learning Model for Mooring Lines Fault Detection**

- *Synopsis: DL model for fault diagnosis and process monitoring of thin mooring lines from 2D images via departure angle monitoring.*
- *Duties: Research Grant Writing, AI Developer, Ph.D. Scholar*

2021 **Efficient Deep Learning Framework for Analysis of Pore Pressure Profiling and Abnormal Pressure Zone Detection**

- *Synopsis: Used 3D seismic data to predict pore pressure zones using Deep Neural Networks and ML algorithms (SVM, Naïve Bayes, and kNN). The project was implemented using Keras in Python.*
- *Duties: AI Developer*

Skills Overview

Programming Languages	Python (TensorFlow, Keras, PyTorch, Pandas, NumPy, Matplotlib), Java, C++, C#, PHP, JS
Other Tools	Microsoft Azure, MATLAB, Version Control (Git)
Other Technical Skills	HPC, Generative AI (Transformers, Foundation Models, and Graph Neural Networks), Deep Learning (CNN), Machine Learning, Databases (Relational, Graph, and NoSQL), Web Engineering
Soft Skills	Problem Solving, Communication, Leadership, Teamwork, Writing, Public Speaking

Languages

English	Proficient C1
Urdu/Hindi	Native Speaker

Awards

Year	Organizer	Title
2025	*University of Sharjah, UAE*	Finalist for 5th Women in Research Forum (WIRF)
2024	*U.S Department of State, USA*	1st Prize for TechWomen Seed Grant for Country Impact Project
2024	*IEEE IECON, USA*	1st Finalist Prize for IEEE IES Generative AI Hackathon
2022	*BENMAX, Indonesia*	1st Prize for College Scientific Paper in International Biomedical Engineering Annual Contest
2022	*Malaysian universities Oil and Gas Paper Contest*	Best Paper Award for Exploration Track
2022	*Universiti Teknologi PETRONAS, Malaysia*	2nd Runner Up Awards for Thesis in 3 Minutes (3MT)
2021	*CISD, Universiti Teknologi PETRONAS, Malaysia*	Q1/Q2 Publication Award
2021	*CISD, Universiti Teknologi PETRONAS, Malaysia*	Department's Best Postgraduate Student Award
2021	*MNNF Network, Malaysia*	Gold Award for Thesis in 5 Minutes (T5M)
2021	*Haliburton, Malaysia*	1st Place Data Science Hackathon
2021	*Universiti Teknologi PETRONAS, Malaysia*	Silver Award for International Emerging Technology Competition

Certifications

Year	Organizer	Title
2024	*U.S Department of State, USA*	TechWomen Emerging Leader (Pakistan)
2024	*University of Cambridge, UK*	International Summer Program
2024	*International Center for Theoretical Physics, Italy*	Advanced School on Applied Machine Learning
2024	*International Center for Theoretical Physics, Italy*	Youth in High Dimensions: Recent Progress in Machine Learning, High-Dimensional Statistics and Inference
2023	*Technical University Munich, Germany*	Research Opportunities Week (ROW)

2023	*National Institute of Theoretical and Computational Sciences (NITheCs), South Africa; International Center for Theoretical Physics, Italy*	High Performance Computing for Sustainable Development
2023	*Higher Education Commission, Pakistan*	Women Leadership Program
2022	*CAPE, Universiti Teknologi PETRONAS, Malaysia*	Biofuel (Green Energy) Production and Parametric Analysis for High Yield via ASPEN HYSYS Simulation
2021	*DeepLearning.AI*	TensorFlow Developer Professional Certification
2021	*CAPE, Universiti Teknologi PETRONAS, Malaysia*	Application of Future Technologies (Machine Learning) for Biofuel (Green Energy) Production
2020	*Universiti Teknologi PETRONAS, Malaysia*	AI-100T01- Designing and Implementing an Azure AI Solution