


PERSONAL INFORMATION

Usman Ahmed

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EDUCATION

Oct 2019– Oct 2023 PhD Candidate in Computer Science

Western University of Science and Technology, Bergen, Norway

Research activity: Sequence-driven analytics and prediction.

Supervisor: Dr. Jerry Chun-Wei Lin

Oct 2016– July 2018 Master of Science in Computer Science

Capital University of Science and Technology, Islamabad, Pakistan

Score: 93%

Thesis: [RALB-HC: A Resource Aware Load Balancer for Heterogeneous Cluster](#)

Supervisor: Dr. Muhammad Aleem

Sep 2012– July 2016 Bachelor of Science in Computer Science

HITEC University, Taxila, Pakistan.

Score: 72%

Thesis: [Intelligent and Flexible Home Automation System](#)

Supervisor: Dr. Faraz Ahsan

WORK EXPERIENCE

Oct 2019 – Oct 2023 PhD research fellow, Western University of Science and Technology, Bergen, (Norway)

As a PhD candidate with expertise in data analytics, artificial intelligence, information technology, explainable machine learning, and cloud computing, I have designed and implemented algorithms for data mining, machine learning, and deep learning applications that focus on sequence-driven analysis and prediction. My research has been used in numerous domains and applications, and I have also integrated my algorithms into a high-volume data processing environment in a cloud-based development and production environment. I am experienced in using explainable machine learning to work with different types of data, such as text, images, and videos. My research has been featured in high ranked journals and conferences, and I have also contributed to the grant-writing process. Academic courses taken during the degree are as follows:

(1) [PCS902](#) - Research Methodology, Research Ethics and Scientific Work Practice

(2) [PCS951](#) - Distributed Computing Systems for High Volume Data Processing

(3) [PCS956](#) - Research Trends in Applied Machine Learning

TensorFlow

Scikit-Learn

PyTorch

Google Cloud Platform

Hadoop

Python

Explainable machine learning

Learning latent representations

Continuous space search

April 2019 – Sep 2019 Research Graduate Assistant at Institute of Space Technology, Islamabad, (Pakistan)

I built and deployed a video analytic tool using a Region Proposal Convolutional Neural Network. My focus was to work with multiple real-time streams of video data to detect multiple objects and dynamically skip irrelevant frames for classification on the video stream. I successfully developed a model to help detect objects in multiple video streams efficiently, and the model was tested for accuracy and precision. Additionally, I trained my model to recognize objects from different angles and was able to improve the accuracy rate to over 95%. My work significantly improved the accuracy of object detection in multiple video streams.

Video Analytic Tool

Object Detection

Multiple Video Streams

Object Recognition

Jan 2019 – Oct 2019 Python Developer at Intelligent Solutions Rawalpindi, (Pakistan)

As an experienced programmer and have used a variety of technologies, including Python, C/C++, TensorFlow, Keras, and PyTorch. I have also worked with open-source libraries such as Scikit-learn and NLTK.

Heterogeneous Computing

C/C++

Keras

Scikit-learn

NLTK

Sep 2018 – Jan 2019 Lecturer at The University of Lahore Islamabad Campus, (Pakistan)

I coordinated and managed the Object-Oriented Programming and Data Structures classes in the Fall of 2018. In addition to my faculty duties, I guided graduate students in publishing their findings in professional journals. Furthermore, I provided guidance to students on academic and career-related matters. Alongside other faculty members, I helped our department to write grant proposals in order to secure external research funding.

Object-Oriented Programming

Data Structures

Java

C++

Python

May 2018 – Oct 2018 Junior Lecturer at The University of Lahore Islamabad Campus, (Pakistan)

I was responsible for managing the Lab courses in the Computer Science department for the Spring 2018 semester, including Operating Systems, Data Structures and Artificial Intelligence. I was also tasked with preparing course materials, such as syllabi, homework assignments and handouts. Additionally, I helped students to initiate, facilitate, and moderate lab discussions, and acted as a student supervisor for laboratory work.

Java

C++

Python

May 2016 – Mar 2018 Data Analyst at Infinity Solution X Rawalpindi (Pakistan)

I implemented machine learning-based solutions in the areas of image processing, deep learning, and natural language processing. Additionally, I worked on a heterogeneous cluster and applied a diverse load-balancing algorithm to maximize resource utilization.

Python

June 2017 – Aug 2017 Developer in Sigmaesol Tec Lahore (Pakistan)

Our team is conducting research into the utilization of nonnegative matrix factorization (NMF) models for the automated generation of game content. The NMF generator is being developed to create new levels based on NMF training. This research aims to leverage Machine Learning to create content for games in an efficient and effective way.

Nonnegative Matrix Factorization (NMF)

Automated Generation

Level Generation

Scholar Profiles [Google Scholar](#) | [Research gate](#) | [ORCID](#) | [CRIStin](#) | Citations: 502 | h-index: 13 | i10-index: 21

SELECTED PUBLICATIONS

Conference **Usman Ahmed**, Jerry Chun-Wei Lin, "*Sequence-Driven Analytics and Prediction.*" In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*, pp. 5104-5107. (2022).. Core: **A**.

- Journal **Usman Ahmed**, Jerry Chun-Wei Lin, and Gautam Srivastava. "Multi-Aspect Deep Active Attention Network for Healthcare Explainable Adoption." *IEEE Journal of Biomedical and Health Informatics* (2022). IF: **5.7** , JCR: **Q1**, and Norwegian ranking: **R1**.
- Conference **Usman Ahmed**, Jerry Chun-Wei Lin, Stefania Tomasiello, and Gautam Srivastava. *Explainable Mental Health Fuzzy Deep Active Learning Technique.* "In 2022 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), pp. 1-8. IEEE, (2022). Core: **B**.
- Journal **Usman Ahmed**, Rutvij H. Jhaveri, Gautam Srivastava, and Jerry Chun-Wei Lin. "Explainable deep attention active learning for sentimental analytics of mental disorder." *Transactions on Asian and Low-Resource Language Information Processing* (2022). IF: **1.9** , JCR: **Q2**, and Norwegian ranking: **R1**.
- Journal **Usman Ahmed**, Jerry Chun-Wei Lin, Gautam Srivastava, "Mitigating Adversarial Evasion Attacks by Deep Active Learning for Medical Image Classification", *Multimedia Tools and Applications* 81, no. 29 (2022): 41899-41910. IF: **2.3** , JCR: **Q2**, and Norwegian ranking: **R1**.
- Journal **Usman Ahmed**, Jerry Chun-Wei Lin, "Adversarial Ensemble Modeling for Evasion Attack Detection." *In Joint 12th International Conference on Soft Computing and Intelligent Systems and 23rd International Symposium on Advanced Intelligent Systems (SCIS&ISIS), pp. 1-4. IEEE, (2022).* IF: **3.97** , SJR: **0.78**, and JCR: **Q2**.
- Journal **Usman Ahmed**, Jerry Chun-Wei Lin, Gautam Srivastava, "Unmanned Aerial Multi-Object Dynamic Frame Detection and Skipping using Deep Learning on Internet Of Drones", *IEEE Internet of Things Magazine* 4, no. 4 (2021): 36-39. IF: **3.97** , SJR: **0.78**, and JCR: **Q2**.
- Journal **Usman Ahmed**, Suresh Kumar Mukhiya, Gautam Srivastava, Yngve Lamo, and Jerry Chun-Wei Lin. "Attention-Based Deep Entropy Active Learning Using Lexical Algorithm for Mental Health Treatment." *Frontiers in Psychology* 12 (2021): 471., IF: **2.0** , JCR: **Q2**, and Norwegian ranking: **R1**.
- Conference **Usman Ahmed**, Jerry Chun-Wei Lin, and Gautam Srivastava. "Fuzzy Explainable Attention-based Deep Active Learning on Mental-Health Data." *In IEEE International Conference on Fuzzy Systems (FUZZ-IEEE) pp. 1-6. IEEE, (2021).*, Core: **B**.
- Journal **Usman Ahmed**, Jerry Chun-Wei Lin, Gautam Srivastava, Rizwan Yasin, and Youcef Djenouri. "An evolutionary model to mine high expected utility patterns from uncertain databases." *IEEE transactions on emerging topics in computational intelligence* 5, no. 1 (2020): 19-28., IF: **8.28** , JCR: **Q1**, and Norwegian ranking: **R1**.

BOOKS

- Book Suresh Kumar Mukhiya, **Usman Ahmed** "Hands-on Exploratory Data Analysis with Python: Perform EDA Techniques to Understand, Summarize, and Investigate Your Data." Packt Publishing (2020)
- Book Suresh Kumar Mukhiya, **Usman Ahmed** Data analytics, Python - Advanced Exploratory Data Analysis With Python - Under Publication, expected early 2023- Manning Publications Co.

SKILLS

- Machine learning engineer Developer - EXPERT
- Handling data (image, text, and video)
 - Model Building and Evaluation Pytorch, Tensorflow, Scikit learn
 - Deployment and Monitoring
 - Data protection and security.
- Programming Full-stack development - EXPERT
- Better understanding of Python, C++ and C,
 - Working knowledge of Pytorch, Tensorflow, Scikit learn, and Django
 - Testing frameworks like Locust, pymoo
 - Libraries: scikit-image , spaCy, scikit-learn .
- R&D Research and Development - EXPERT

	<ul style="list-style-type: none"> – Problem domain analysis and further research – IT team leadership – Experienced in documentation and research publishing in high-impact factor journals/conferences.
Project Management	IT project management- ADVANCE <ul style="list-style-type: none"> – Project planning, Communication, Quality control – IT team leadership – Documentation and publishing
Version Control	Versioning (GIT) - INTERMEDIATE
Cloud	Cloud Infrastructur - ADVANCE
Computer skills	<ul style="list-style-type: none"> – Programming Languages: Python, Java, C and C++. – Programming Library: TensorFlow 2.0, PyTorch, Keras, OpenCV, Scikit Learn, Pandas, Jupyter, NumPy, scipy, matplotlib, plot and NLTK. – Frameworks: Django, OpenCL, Hadoop, Apache Mesos, Podman, and IBM Watson. – Operating System: Windows, Debian, CentOS and Ubuntu – Cluster: High-performance cluster (HPC) a supercomputer used for parallel processing for solving complex computational problems. – Tools: Microsoft Visual Code Studio, Zotero, Inkscape, Eclipse, Sublime, Microsoft Office and Adobe Photoshop.
Managerial skills	During my lectureship and Master program, I organized a seminar series on various research methods, including Machine learning, Natural Language Processing, Image Processing, and an Introduction to the Python Language, which were available to both graduate and undergraduate students.
Team work	For two years, I volunteered at a university welfare society, helping to organize social events. Additionally, I managed a local football club, Rawal Friends Football Club.
Intercultural skills	For a period of one year, I served as the Secretary of HITEC Sports Society. My responsibilities included organizing various sports events within the University and representing the University in external competitions.

ACADEMICS

Teaching Assistant	<p>I was responsible for overseeing the administration of various courses, which included delivering lectures, creating course material, assigning homework, running lab exercises and providing handouts.</p> <p>(1) DAT107 - Database, (2) MAT101 - Discrete Mathematics, (3) DAT103 - Computers and Operating Systems, and (4) DAT255 - Deep learning engineering</p>
Summer School	<ul style="list-style-type: none"> – (1) HVL-MMIV-DLN-AI-2022: A hands-on course on artificial intelligence in computational biotechnology and medicine. (<i>April 2022 - June 2022</i>) – (2) Systems thinking and creative problem-solving. (<i>June 2023 - July 2023</i>)
Reviewer	IEEE Transactions on Neural Networks And Learning Systems (TNNLS), IEEE Transactions On Cybernetics (TCYB), IEEE Transactions On Dependable And Secure Computing (TDSC), And Information Sciences. IEEE Intelligent Systems, Expert System With Applications, Cluster Computing, Soft Computing, Applied Intelligence, Applied Intelligence, IEEE Access, Multimedia Systems.
Seminar Organizer	Workshop of Activating Participants Through Social Networks and Gamification in Under tourism Areas: Artificial Intelligence and Data Mining Scheme (Virtual Workshop), Bergen, Norway (20-21, June 2022)

ACHIEVEMENT

Dean honour	In 2017, I was awarded a Certificate of Appreciation by the Dean of Computing Faculty, CUST, Islamabad, Pakistan, for having the highest GPA in a semester with a score of 3.88 out of 4.
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Best Final Year Project	In 2016, I was honoured with a gold medal for my outstanding Bachelor of Science (Computer Science) final year project at HITEC University Taxila, Pakistan.
Certificate of Appreciation	In 2016, I was awarded a Certificate of Appreciation in recognition of my successful organization of the All Pakistan University Olympiads at HITEC University Taxila, Pakistan.

LANGUAGES

Urdu: Mother tongue
English: Fluent
Norwegian: A1 - Beginner

REFERENCE

Name: Jerry Chun-Wei Lin - PhD
Position: Professor, FIET, SMIEEE, SMACM
Organization: Department of Computer Science, Electrical Engineering and Mathematical Sciences, Western Norway University of Applied Sciences, Bergen, Norway.
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