Curriculum Vitae

Dr. MAQBOOL KHAN

Assistant Professor | Researcher | Solution Architect | SM-IEEE
SCCH, Austria
PAF-IAST, Pakistan
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Google Scholar : Profile

www.maqboolkhan.com

Job Position:

Research Scientist/ Data Scientist / Senior Researcher /
Big Data Architect / Solution Architect /Associate Professor

Job Objective:

To be sincere with my profession and to achieve the highest of my field through constant struggle. Desiring to Work in fast paced, quality conscious and rapidly changing environment requiring high analytic and decision-making skills at a challenging position. I'm eager of solving data science problems and my goal is to become a **Research Scientist and work on technology for humanity.**

Personal Data

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- Name : Maqbool Khan
- Father Name : Haji Balqiaz Khan
- Nationality : Pakistani
- Sex : Male
- Date of Birth : 11/04/1982

Languages

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- English : Fluent
- Urdu : Fluent
- Pashto : Mother Tongue
- Chinese : Fluent (HSK-4)
- Arabic : Basic

Educational Qualification

Degree	Subject	Year	Division	Board / University
Post Doc	Data Science	2023	-	Software Competence Center Hagenberg, Austria
Ph.D.	Computer. Science (Big Data)	2018	1st	Nanjing University, China 南京大学 (QS# 114)
M.S	Information Security	2013	1st	HuaZhong University Of Science and Technology, Wuhan, Hubei, **China** 华中科技大学武汉
M.Sc.	Computer Science	2004	1st	Gomal University D-I-Khan KPK, Pakistan
BSc	Computer Science	2002	1st	Gomal University D-I-Khan, KPK, Pakistan
B. Ed	Education	2005	1st	A.I.O.U Islamabad, Pakistan
F. Sc	Pre-Engineering	2000	1st	B.I.S.E Bannu, KPK, Pakistan
S.S.C	Science Group	1998	1st	B.I.S.E Bannu, KPK, Pakistan

Specialization (*Online Diplomas*)*

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- **BIG DATA** (University of California, San Diego, USA)
- **PYTHON** (University of Michigan, USA)
- **EXECUTIVE DATA SCIENCE** (John Hopkin University, USA)
- **SOFTWARE PRODUCT MANAGMENT (**University of Alberta, Canada
- **DEEP LEARNING** (deeplearning.ai)
- **NATURAL LANGUAGE PROCESSING** (deeplearning.ai)
- **MACHINE LEARNING** : Stanford University, USA (Prof. Andrew Ng.)

Certifications (*Online**)

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- **MACHINE LEARNING (**University of Washington, USA)
- **Data Science** (John Hopkins University, USA)
- **DIGITAL MANUFACTURING & DESIGN**
  - University at Buffalo, State University of New York, USA
- **Block Chain** (IBM)
- Blockchain Foundation for Developers (*GDE9MWJBBPBL*)

**www.coursera.org/verify*

Networking Skills

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- Microsoft Windows Server
- MS (DNS, DHCP, IIS, ISA Server, Exchange Server)
- Domain base network and workgroup network
- Active Directory, Security Policies
- FTP, TFTP, NAT, IP Tables
- Cisco (Routers, Switches, VLAN)
- Protocols: RIP1, RIP2, IGRP, OSPF, EIGRP
- Cloud Computing (IaaS, PaaS, SaaS)
- Network Modelling and monitoring
- SDN & NFV with Nokia Telco Cloud
- Linux (RHEL, Ubuntu, Mint)
- Sensors installation and configurations
- Installation and Configuration of Riverbed

Programming Skills

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- Microsoft Visual Studio.Net, C#, Visual Basic.Net, Crystal Reports
- Java, Python, C++
- Microsoft SQL Server / MySQL / Oracle 9i
- Hadoop & MapReduce
- HBase, HIVE, Pig, Spark & Splunk
- neo4j, NetworkX. MongoDB, HDFS
- Virtualization (VMWare, Oracle VM Virtual Box)
- MyEclipse, IntelliJ IDEA
- Spring Framework, MVC
- Web Services, APIs
- Node.js, Vue.js, D3.js
- Annaconda Navigator (Spyder, iPython, Jupyter)

Analytical Skills

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- Predictive analytical modelling
- Machine/Deep Learning Algorithms implementation
- Python, Scala, R
- Parallel Processing with Apache Spark (PySpark, Scala)
- NumPy, SciPy, Matplotlib, Scikit-learn, Pandas.
- SPSS, Weka, KNIME

Cloud Computing Skills

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- Google Cloud Platform
- Google App Engine and Compute Engine
- API and Services

- Containers and Kubernetes
- Deployment manager
- Microservices

Google Cloud Certified – **Associate Cloud Engineer**
Series ID: 3857, Certification ID: TbPfaQ
Expiration Date: 30 July 2021

Google Cloud Certified – **Professional Cloud Architect**
Series ID: 30632, Certification ID: Czk6l9
Expiration Date: 3 July 2022

Academic Thesis

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- M.Sc. thesis title "Computerization of Account System of Allied Bank of Pakistan"
- MS thesis title, "*FP-Tree based Role Mining with pre-assigned weighted permissions"*.
- PhD thesis title, "*Research on Big Data Graphs Summarization Theory and applications in the Cloud Environment"*.

Government Funded Projects

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Title: **"**AI-based skilled people marketplace for finding nearby experts and tasks to facilitate citizens"

Awarded by: Pakistan Science Foundation (PSF)

Position: Principal Investigator **(PI)**

Main Responsibilities:

- Project Coordinator :Leading the project.
- AI and data science algorithms development
- Speech Recognition module development
- Web and Mobile App Development

Publications

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Books– Conference/Workshop Proceedings (Edited):

1) G. Kotsis, A Min Tjoa, Ismail Khalil, Bernhard Moser, Alfred Taudes, Atif Mashkoor, Johannes Sametinger, Jorge Martinez-Gil, Florian Sobieczky, Lukas Fischer, Rudolf Ramler, **Maqbool Khan**, Gerald Czech., Database and Expert Systems Applications-DEXA 2022 Workshops: 33rd International Conference, DEXA 2022, Vienna, Austria, August 22–24, 2022, Proceedings. Springer Nature, 2022. https://doi.org/10.1007/978-3-031-14343-4

2) Gabriele Kotsis, A Min Tjoa, Ismail Khalil, Bernhard Moser, Atif Mashkoor, Johannes Sametinger, **Maqbool Khan**. Database and Expert Systems Applications - DEXA 2023 Workshops: 34th International Conference, DEXA 2023, Penang, Malaysia, August 28–30, 2023, Proceedings. Springer Nature, 2023, https://doi.org/10.1007/978-3-031-39689-2

Conferences:

1) **Maqbool Khan**, Liu Meng, Wanchun Dou, Shui Yu "vGraph: Graph Virtualization towards Big Data" in *IEEE CBD 2015*, Yangzhou, China. pp. 153-158. https://doi.org/10.1109/CBD.2015.33

2) **Maqbool Khan**, Xiolong Xu, Wanchun Dou, Shui Yu "OSaaS: Online Shopping as a Service to Escalate E-Commerce in Developing Countries" in *IEEE HPCC/SmartCity/DSS 2016*, Sydney, Australia. pp. 1402-1409. https://doi.org/10.1109/HPCC-SmartCity-DSS.2016.0200

3) **Maqbool Khan**, Xiaotong Wu, Xiolong Xu, Wanchun Dou, "Big Data Challenges and opportunities in Industry 4.0" in *IEEE ICC 2017*, Paris, France pp. 1-6. https://doi.org/10.1109/ICC.2017.7996801

4) *Wajid Rafiq*, **Maqbool Khan,** M. Sohail, Asma Irshad, *"A Graph Theory based Method to Extract Social Structure in the Society"* in INTAP (2018) Pakistan. https://doi.org/10.1007/978-981-13-6052-7_38

5) Wajid Rafique, **Maqbool Khan**, Nadeem Sarwar, Wanchun Dou "A Security Framework to Protect Edge Supported Software Defined Internet of Things Infrastructure" CollaborateCom, 2019 (CCF) https://doi.org/10.1007/978-3-030-30146-0_6

6) Wajid Rafique, **Maqbool Khan**, Nadeem Sarwar, Wanchun Dou, "Maintainable Software Using Collaboration Between Architecture and Requirements in Heterogeneous IoT Paradigm" CollaborateCom,2019 (CCF) https://doi.org/10.1007/978-3-030-30146-0_34

7) W. Rafique, **Maqbool. Khan**, X. Zhao, N. Sarwar, and W. Dou, "A Blockchain-Based Framework for Information Security in Intelligent Transportation Systems," presented at the International Conference on Intelligent Technologies and Applications, 2019, pp. 53–66. https://doi.org/10.1007/978-981-15-5232-8_6

8) P. Haindl, G. Buchgeher, **Maqbool. Khan** and B. Moser, "Towards a Reference Software Architecture for Human-AI Teaming in Smart Manufacturing," 2022 IEEE/ACM 44th International Conference on Software Engineering: New Ideas and Emerging Results (ICSE-NIER), 2022, pp. 96-100, https://doi.org/10.1109/ICSE-NIER55298.2022.9793509

9) M. Qasim, **Maqbool. Khan**, W. Mehmood, F. Sobieczky, M. Pichler, and B. Moser, "A Comparative Analysis of Anomaly Detection Methods for Predictive Maintenance in SME," presented at the Database and Expert Systems Applications - DEXA 2022 Workshops, 2022, vol. 1633, pp. 22–31. https://doi.org/10.1007/978-3-031-14343-4_3

10) Thomas Hoch, Bernhard Heinzl, Gerald Czech, **Maqbool Khan**, Philipp Waibel, Stefan Bachhofner, Elmar Kiesling, Bernhard Moser ., "Teaming. AI: enabling human-AI teaming intelligence in manufacturing," presented at the

Proceedings of Interoperability for Enterprise Systems and Applications Workshops: AI Beyond Efficiency: Interoperability towards Industry, 2022, vol. 3214, pp. 1–5. https://ceur-ws.org/Vol-3214/WS5Paper6.pdf

11) W. Rafique, B. Shah, S. Hakak, **M. Khan**, and S. Anwar, "Blockchain Based Secure Interoperable Framework for the Internet of Medical Things," in *Proceedings of International Conference on Information Technology and Applications*, S. Anwar, A. Ullah, Á. Rocha, and M. J. Sousa, Eds., Singapore: Springer Nature Singapore, 2023, pp. 533–545. https://doi.org/10.1007/978-981-19-9331-2_46
12) Khan, A., Zhang, H., Boudjellal, N., Ahmad, A., **M. Khan**. (2023). LocBERT: Improving Social Media User Location Prediction Using Fine-Tuned BERT. In: Kotsis, G., *et al.* Database and Expert Systems Applications - DEXA 2023 Workshops. DEXA 2023. Communications in Computer and Information Science, vol 1872. Springer, Cham. https://doi.org/10.1007/978-3-031-39689-2_3
13) Khan, M.A., Ahmad, F., Khan, K., **M. Khan**. (2024). Pashto Language Handwritten Numeral Classification Using Convolutional Neural Networks. In: Rasheed, J., Abu-Mahfouz, A.M., Fahim, M. (eds) Forthcoming Networks and Sustainability in the AIoT Era. FoNeS-AIoT 2024. Lecture Notes in Networks and Systems, vol 1036. Springer, Cham. https://doi.org/10.1007/978-3-031-62881-8_24

14) S. Florian, I. Bukovsky, O. Budik, M. Khan (2023). Predictive Maintenance Cost Model, European Networks for Business and Industrial Statistics (ENBIS-2023), https://conferences.enbis.org/event/32/contributions/423/

Journals:

1) Xiaotong Wu, Taotao Wu, **Maqbool Khan**, Qiang Ni, Wanchun Dou, *IEEE Transactions on Big Data*, "Game Theory Based Correlated Privacy Preserving Analysis in Big Data" https://doi.org/10.1109/TBDATA.2017.2701817 (IF: 7.2)

2) Xiolong Xu, Xuyuan Zhang, **Maqbool Khan**, Wanchun Dou, Shui Yu *Future Generation Computer Systems (Elsevier)*, "A Balanced Virtual Machine Scheduling Method for Energy-Performance Trade-offs in Cyber-Physical Cloud Systems". https://doi.org/10.1016/j.future.2017.08.057 (IF: 6.2)

3) **Maqbool Khan,** A. Ahmed, Florian, B. Moser, M. Pichler, "A Systematic Mapping Study of Predictive Maintenance in SME" IEEE Access, vol. 10, no 1109, pp. 88738-88749, 2022. https://doi.org/10.1109/ACCESS.2022.3200694 (IF: 3.4)

4) Wajid Rafique, **Maqbool Khan**, Nadeem Sarwar, Wanchun Dou "SocioRank*: Communities and Social Roles Detection Method in Social Networks" in Computers and Electrical Engineering https://doi.org/10.1016/j.compeleceng.2019.03.010 (IF: 2.4)

5) W. Rafique, **M. Khan**, S. Khan, and J. S. Ally, “SecureMed: A Blockchain-Based Privacy-Preserving Framework for Internet of Medical Things,” *Wireless Communications and Mobile Computing*, vol. 2023, p. 2558469, Apr. 2023, https://doi.org/10.1155/2023/2558469 (IF: 2.46)

6) Khattak, Saadullah, **Maqbool Khan**, Tahir Usman, Johar Ali, Dong-Xing Wu, Muhammad Jahangir, Kashif Haleem et al. "Assessment of General Populations Knowledge, Attitude, and Perceptions Toward the Coronavirus Disease (COVID-19): A Cross-Sectional Study From Pakistan." Frontiers in medicine 8 (2021). https://doi.org/10.3389/fmed.2021.747819 (IF: 5.09)

7) S. Syed, K. Khan, **M. Khan**, RU Khan, A. Aloraini “Recognition of inscribed cursive Pashtu numeral through optimized deep learning” *PeerJ Computer Science 10:e2124 https://doi.org/10.7717/peerj-cs.2124* (IF: 2.7)

8) A. Ali, **M. Khan**, K. Khan, R.U. Khan, and A. Aloraini "Sentiment Analysis of Low-Resource Language Literature Using Data Processing and Deep Learning," Computers, Materials & Continua (CMC)., vol. 79, no. 1, pp. 713-733. 2024. https://doi.org/10.32604/cmc.2024.048712 (IF: 2.0)

9) Salabat Khan, L Zhu, Z. Zhang, MA Rahim, **Maqbool Khan**, X Du, M Guizani, “Accountable Credential Management System for Vehicular Communication” Vehicular Communications https://doi.org/10.1016/j.vehcom.2020.100279 (IF: 5.8)

10) Ashraf, Muhammad Azeem, Muhammad Naeem Khan, Sohail Raza Chohan, **Maqbool Khan**, et.al "Social Media Improves Students’ Academic Performance: Exploring the Role of Social Media Adoption in the Open Learning Environment among International Medical Students in China." In Healthcare, vol. 9, no. 10, p. 1272. MDPI, 2021. https://doi.org/10.3390/healthcare9101272 (IF: 2.4)

11) Khattak, Saadullah, Muhammad Faheem, Bilawal Nawaz, **Maqbool Khan**, Nazeer Hussain Khan, Nadeem Ullah, Taj Ali Khan et al. "Knowledge, Attitude, and Perception of Cancer Patients towards COVID-19 in Pakistan: A Cross-Sectional Study." International Journal of Environmental Research and Public Health 19, no. 13 (2022): 7926. https://doi.org/10.3390/ijerph19137926 (IF: 4.61)

12) Pir Muhammad, Sumaira Hanif, Jiliang Yan, Fawad Ur Rehman, Jiefei Wang, **Maqbool Khan**, Roger Chung, Albert Lee, Meng Zheng et al., “SERS-based nanostrategy for rapid anemia diagnosis,” Nanoscale, vol. 12, no. 3, pp. 1948–1957, 2020. https://doi.org/10.1039/C9NR09152A (IF: 7.8)

13) S. Khattak, Muhammad Idress, H. Iqra Iqbal, **Maqbool Khan**, Nasir Assad, MN Khan, MT Yousf, Muhammad et al., “Assessment of Attitudes and Intentions towards COVID-19 Vaccines and Associated Factors among General Populations of Pakistan: A Cross-Sectional Study,” vaccines, vol. 10, no. 1583, pp. 1–15, 2022. https://doi.org/10.3390/vaccines10101583 (IF: 5.2)

14) Jiang, J. Guo, **Maqbool Khan**. Y. Cui, and W. Lin, “Energy-saving Service Offloading for the Internet of Medical Things Using Deep Reinforcement Learning,” ACM Transactions on Sensor Networks, vol. 10, no. 1145, 2022. https://doi.org/10.1145/3560265 (IF: 3.69)

15) Syed Furqan Qadri, Hongxiang Lin, Linlin Shen, Mubashir Ahmad, Salman Qadri, Salabat Khan, **Maqbool Khan**, Syeda Shamaila Zareen, et al, "CT-Based Automatic Spine Segmentation Using Patch-Based Deep Learning", International Journal of Intelligent Systems, vol. 2023, Article ID 2345835, 14 pages, 2023. https://doi.org/10.1155/2023/2345835 (IF: 8.99)

16) R. Ullah, **M.Khan**. et al., "1.12Tbps-16QAM Uncompensated Long-Haul Transmission Employing a New Self-Oscillating Optical Frequency Comb Generator Both at Transmitter and Receiver," in IEEE Photonics Journal, vol. 16, no. 2, pp. 1-7, April 2024, Art no. 7200507, https://doi.org/10.1109/JPHOT.2024.3376424 (IF: 2.24)

17) W. Wang, X. Xu, M. Bilal, **M. Khan** and Y. Xing, "UAV-Assisted Content Caching for Human-Centric Consumer Applications in IoV," in IEEE Transactions on Consumer Electronics, vol. 70, no. 1, pp. 927-938, Feb. 2024, https://doi.org/10.1109/TCE.2023.3349079 (IF: 4.3)

18) Khan, A., Boudjellal, N., Zhang, H., Ahmad, A., **M. Khan**. (2023). From social media to ballot box: leveraging location-aware sentiment analysis for election predictions. Computers, Materials & Continua, 77(3), 3037-3055. https://doi.org/10.32604/cmc.2023.044403 (IF: 2.0)

19) S. Syed, A. Iqbal, W. Mehmood, Z. Syed, **M. Khan** and G. Pau, "Split-Second Cryptocurrency Forecast Using Prognostic Deep Learning Algorithms: Data Curation by Deephaven," in IEEE Access, vol. 11, pp. 128644-128654, 2023, *https://doi.org/*10.1109/ACCESS.2023.3331652 (IF: 3.4)

20) A. Khan, H. Zhang, N. Boudjellal, A. Ahmad, and **M. Khan** "Improving Sentiment Analysis in Election-Based Conversations on Twitter with ElecBERT Language Model," Computers, Materials & Continua (CMC), vol. 76, no. 3, pp. 3345-3361. 2023. https://doi.org/10.32604/cmc.2023.041520 (IF: 2.0)

21) F. Ullah, Y. Long, I. Ullah, RU Khan, S. Khan, K. Khan, **M. Khan**, G Pau, "Deep Hyperspectral Shots: Deep Snap Smooth Wavelet Convolutional Neural Network Shots Ensemble for Hyperspectral Image Classification," in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, vol. 17, pp. 14-34, 2024, https://doi.org/10.1109/JSTARS.2023.3314900 (IF: 5.99)

22) M. Khan, S. Naz, Y. Khan, M. Zafar, **M. Khan** and G. Pau, "Utilizing Machine Learning Models to Predict Student Performance From LMS Activity Logs," in IEEE Access, vol. 11, pp. 86953-86962, 2023, https://doi.org/10.1109/ACCESS.2023.3305276 (IF: 3.4)

23) S. Syed, **M. Khan**, R. Ahmed, SM. Talha, "An Intracranial Tumor Detection using Magnetic Resonance Imaging and Deep Learning" in IJEM: Computer Science & Artificial Intelligence, Publishing House International, 2023, https://doi.org/10.54938/ijemdcsai.2023.02.1.239

24) AU Khan, SU Jan, MN Khan, **M Khan** et. al, "Based on the S-O-R Theory Adoption Intention of Blockchain Technology in Libraries: A Two-Stage Analysis SEM-PLS and ANN" in Library Hi Tech, Emerald Publishing 2024. (IF: 1.6), https://doi.org/10.1108/LHT-03-2024-0128

25) M. A. Khan, **M. Khan**, H. Dawood, H. Dawood and A. Daud, "Secure Explainable-AI Approach for Brake Faults Prediction in Heavy Transport," in IEEE Access, 2024, https://doi.org/10.1109/ACCESS.2024.3444907

26) Kiobya, T., Zhou, J., Maiseli, B. **Khan, M**. Attentive context and semantic enhancement mechanism for printed circuit board defect detection with two-stage and multi-stage object detectors. *Sci Rep* **14**, 18124 (2024). (IF: 3.8) https://doi.org/10.1038/s41598-024-69207-8

27) BA Moser, F Krause, H Paulheim, E Kiesling, M.Khan, et. al, "Managing Human-AI Collaborations within Industry 5.0 Scenarios via Knowledge Graphs: Key Challenges and Lessons Learned" in Frontier in AI, 2024, (IF: 3.1) https://doi.org/10.3389/frai.2024.1247712

Awards and Honours(Recognitions)

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1. PAF-IAST Post-doc Research Fellowship at SCCH, Austria (2021-2023)
2. Full Scholarship Award for PhD in China (2013-2018)
   Awarding Institute Name: CSC, China
3. Scholarship Award for MS in China (2011-2013)
   Awarding Institute Name: MOE Pakistan and CSC China

- IEEE Member (2014 - 2022)
- **IEEE Senior Member** (2022 – to-date)
- **ACM** Member (2023 – 2024)
- **Expert Member** of ATOS Scientific Community, France (2019-2020)
- **Google** Professional Cloud Architect (Certified: 2020)

Institutional Services (Administrative & Management Experience)

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1. **Convener, SAR Team** for MS Data Science, PAF-IAST (2024)
2. **Secretary & Member** of Departmental Graduate Committee (DGC), School of Computing Sciences, PAF-IAST (2023- to date)
3. **Member/Secretary** Admissions Committee of MS Programs (2023- to date)
4. **Graduate Coordinator** of MS (AI, DS, IS), PAF-AIST
5. **Research Coordinator** of IT&CS Department, PAF-IAST

6. Curriculum Committee **Member** (ICT Courses)
7. **Member**, Advanced Studies and Research Board (2023 – to date)
8. Event Management Committee **Member** (2021)
9. Final Year Project (FYP) Evaluation Committee **Member** (2023 – to date).
10. Industrial Focal Person, Dept. Of IT&CS, PAF-IAST (2020-2021)
11. Prepared Curriculum of BS and MS Data Science (2021)

Research Services

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Reviewer

1. Electronic Commerce and Research (Springer)
2. World Wide Web Journal (Springer)
3. Digital Communications and Networks (Elsevier-KeAi)
4. IEEE Transactions on Big Data
5. IEEE Transactions on Industrial Informatics
6. IEEE Transactions on Intelligent Transportation Systems
7. IEEE Transactions on Emerging Topics in Computing
8. IEEE Transactions on Vehicular Technology
9. IEEE Transactions on Fuzzy Systems
10. IEEE Internet of Things Journal
11. IEEE Access
12. ACM Computing Surveys

Organising Chair

1. 1st International Workshop on AI System Engineering: Math, Modelling and Software, Linz, Austria (DEXA-2021)
2. 2nd International Workshop on AI System Engineering: Math, Modelling and Software, Vienna, Austria (DEXA-2022)
3. The 3rd International Workshop on AI System Engineering: Math, Modelling and Software, Penang, Malaysia (DEXA-2023)
4. Session Chair @ IEEE HPCC 2016, Sydney, Australia

TPC Member

1. International Conference on Intelligent Manufacturing and Industrial Big Data (ICIMIBD2022), Changsha, China, December 9-11, 2022.
2. The Sixteenth International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA 2024), Athen, Greece, March 10-14, 2024
3. The 22nd IEEE International Symposium on Parallel and Distributed Processing with Applications (IEEE ISPA 2024), Kaifeng, Henan, China October 30 to November 2, 2024.

Guest Editor

1. **International Journal of Intelligent Systems** (Wiley/Hindawi, **IF: 8.99**), Special Issue on "Deep Learning-Driven Knowledge Graphs for Intelligent Computing and Applications", 2022

2. **Symmetry** Journal (MDPI, **IF: 2.7**), Special Issue on "Symmetry and Asymmetry in AI-Enabled Human-Centric Collaborative Computing", 2023
3. **Journal of Cloud Computing** (Springer Nature, **IF: 3.4**), Special Issue on "Mobile Edge Computing Meets AI", 2023-2024
4. **International Journal of Ad Hoc and Ubiquitous Computing** (Inder Science, **IF: 0.7**), Special Issue on "Federated Learning for Edge based IoT Anomaly Detection in Big Data Streams", 2024

Research Projects .

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2021.08 – to-date **SCCH, Austria**
Human-AI Teaming Platform for Maintaining and Evolving AI Systems in Manufacturing (Teaming.AI)
https://www.teamingai-project.eu
Researcher & Data Scientist

Main Responsibilities

- Knowledge modelling for teaming.AI
- Platform Architecture & Open-Source integration
- Research on Shared Mental Models
- Knowledge Graph Embedding

2021.10 – 2022.12 **SCCH, Austria**
AI-based Predictive Maintenance (PredMAin)
https://www.scch.at/data-science/projekte/detail/predmain
Researcher & Data Scientist

Main Responsibilities

- Existing Literature Review for PdM in SME
- PdM Cost Models in SME
- Algorithm's development

2023.02 – 2025.01 **PAF-IAST, Pakistan**
AI-based skilled people market place for finding nearby experts And tasks to facilitate citizens
Awarded by Pakistan Science Foundation (PSF)
Principal Investigator (PI)

Main Responsibilities

- **Project Coordinator**
- Leading the project
- AI and data science algorithms development
- Speech Recognition module development

Professional Projects .

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2020.08 – 2020.10 **ATOS**

Covestro AG (Germany), DTS Project for Sinomax

Visual Source Code, Python (Algorithm development)

JIRA & Confluence

InfluxDB

Main Responsibilities

- IoT Data Pipeline Creation
- Quality analysis of Foam
- Data Modelling and predictive analytics of sensor data
- Merging Image detector and HS code for optimization

2020.04 – 2019.08 **ATOS**

E-Biscus Cargo Scanning App Project (France)

Visual Source Code, Python (Algorithm development)

Main Responsibilities

- Product detection from cargo images
- X-Ray image segmentation
- HS Code detection from product description
- Merging Image detector and HS code for optimization

2020.03 – 2019.06 **ATOS**

Ronbay SAP WMS & ML Project

Jupyter Notebook, Python (Algorithm development)

Main Responsibilities

- Price Forecasting model preparation
- Model tuning and optimization for different metals.
- Framework design for Model implementation in Ronbay

2018.11 – 2019.10 **ATOS**

Prognostics and Health Management (PHM)

Hadoop (HDFS), MongoDB

Apache Spark (Processing)

Jupyter Notebook, Python (Algorithm development)

Main Responsibilities

- Research for Machine health monitoring and algorithm design in the context of Industry 4.0
- Responsible for Solution architecture of PHM to customer
- Failure detection and early alarm generation algorithm
- History data analysis-based prediction of failures to minimize breakdown.
- Lambda Architecture based solution for Real-time streaming.

2018.07 – 2019.03 **CRIMAI, Artificial Intelligence Ltd, China**

Remote Work and Consultancy for Predictive Policing

Research Scientist / Data Scientist

Main Responsibilities

- Criminal records data analysis
- Self-Exciting Process based algorithm design
- ML/DL based predictive algorithm for Crimes
- Time and Space process design and prediction
- Python Pandas, Numpy, Matplotlib, SciPy, Scikit-learn, Keras
- Police patrol scheduling based on Crime forecasting
- Online data plotting on map (Google/ Baidu)

2018.04 – 2018-10 **ATOS**

Predictive Maintenance

Hadoop (HDFS), MongoDB

Apache Spark (Processing)

Python (Algorithm development)

Main Responsibilities

- Research for solution to maintenance in Industry 4.0 context.
- Design and deployment of data-driven solution to maintenance for shop floor
- Predictive maintenance algorithm design and development
- Lambda Architecture based solution for Real-time sensor streaming data
- Industrial data analysis using Pandas, Numpy and matplotlib
- Machine learning and deep learning techniques implementation using Scikit-learn, TensorFlow and Keras libraries.

2018.01 – 2018-03 **Siemens**

Performance Monitoring using Overall Equipment Effectiveness (OEE)

Hadoop (HDFS), Mongo DB, MySQL

Apache Spark (Processing), Apache Kafka, Python, Scala

Main Responsibilities

- Performance measuring module development for shop floor machines and system using big data analysis
- Six Big losses calculation algorithm and implementation
- Data driven algorithm development for different types of OEE
- Real-time Device OEE, production line OEE and factory line OEE calculation algorithm design and development.

2018.10 – 2018-12 **Siemens**

Big Data Workshops

Main Responsibilities

- Workshop for development, testing and management.
- Siemens digital factories visit for finding the gap and adoptability of big data products.
- Guidance of development and sales teams for industrial solution using state of the art technologies.

2017.08 – 2017-09 **Siemens**

Big Data Engineering Lab

Hadoop Ecosystem, Mongo DB, MySQL

Apache Spark & Kafka, Cloudera CDH5, Python, Scala, Java

Main Responsibilities

- Design and initiated big data engineering lab.
- System software installation and integration
- Testing, Maintenance and updating the big data technologies.

2009.01 – 2009.06 **Shams Al Marif & MKHC, Sharjah, UAE**

Employee Management Information System (EMIS)

Main Responsibilities

- Requirement analysis study for EMIS
- System architecture design and development
- Used Visual Basic, MS SQL Server and Crystal Reports
- Testing and implementation of EMIS
- Maintenance and updating EMIS

2009.07 – 2009.12 **Shams Al Marif & MKHC, Sharjah, UAE**

Account Management System

Main Responsibilities

- System study and design
- Development and implementation
- Integration with EMIS
- Maintenance and updating EMIS

2005.11 – 2016.03 **Norsk Data (pvt) Ltd. Pakistan**

Counter Automation System for Post Office

Main Responsibilities

- Counter Automation software (CAS) support in the headquarter of General Post Office Peshawar
- Error detection, trouble shooting and solution providing to CAS
- Developing SQL queries according to Post Office staff need
- Work in collaboration with central development team

2006.01 – 2016.03 **Norsk Data (pvt) Ltd. Pakistan**

Local Record Management system for Western Union

Main Responsibilities

- Requirement Analysis, design and development
- Money transaction records management
- Reports creation
- Visual Basic, SQL Server and Crystal Reports

Supervision

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Ph.D.

1. Mr. Taimur Ahmed (Co-Supervising)

MS/M.Phil. Thesis (Supervised)

1. AI-Based Intelligent Vehicle's Brake Fault Prediction System *(Mr. Muhmmad Ahmed Khan, MS in Artificial Intelligence, Spring-2023)*
2. Fraud Detection in Blockchain Network using Machine Learning and Graph Analytics *(Mr. Fahad Qureshi, MS Data Science, Fall-2023)*
3. Extract, Transform Load Error Detection and Classification Using Machine Learning *(Mr. Nazar Hussain, MS in AI, Fall-2023)*
4. Predictive Maintenance Using MDP & Q-Learning *(Mr. Bilawal Jadoon, MS in Artificial Intelligence, Spring-2024)*
5. Urdu Language command recognizer and translator using MFCC and CNN *(Mr. Usman Nawaz, MS in Artificial Intelligence, Spring-2024)*
6. Pituitary Tumor Feature Extraction Methods Using MRI Images *(Mr. Muhammad Haseeb Khan, MS in AI, Spring-2024)*
7. Multi-Diseases Prediction Based on Low-Cost Blood Test Reports using AI *(Ms. Maria BiBi, MS AI, Spring-2024)*
8. AI based Preservation and Restoration Modelling of the Sub-Surface Water *(Ms. Javeria BiBi, MS AI, Spring-2024)*

MS/M.Phil. Thesis (Co-Supervised)

1. Predictive Maintenance in Industrial IoT using Deep Adversarial Learning *(Ms. Isra Zafat, MS AI, Spring-2023)*
2. ECG Based Arrhythmia Classification using Deep Learning *(Ms. Aqsa Khan, MS AI, Spring-2023)*
3. Healthcare Recommendation System for Cancer Patient *(Ms. Yousra Rehman, MS AI, Spring-2023)*
4. Precise Image generation from EEG through generative models *(Ms. Sana Irshad, MS Data Science, Spring-2024)*
5. AI-based Eye Disease Pre-Symptomatic Detection Using Next-Generation Sequence Data *(Mr. Muhammad Iqbal Khan, MS AI, Spring-2024)*
6. Large Language Model Based Virtual Legal Assistant *(Ms. Nawal Khan, MS AI, Spring-2024)*

Final Year Projects(FYPs)

1. AI-Based Skilled People Marketplace App
   (Mr. Talal Zaman Abbassi and Yaseen Ejaz, Spring-2024)
2. Retrieval Augmented Generation for QA using Knowledge Graphs
   (Mr. Muhammad Yaseen Ejaz and Mr. Muhammad Danish, Spring-2024)
3. ACE (Autonomous Customer Experience)
   (Ms. Sibgha Ali and Mr. Sheikh Abdurrehman – 2024)

Total Experience (10+ years)

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2020.10 – Present	**Pak-Austria Fachhochschule, Institute of Applied Sciences & Technology, Haripur, Pakistan** www.paf-iast.edu.pk **Assistant Professor (Computer Science)**
2021.08 – 2023.01	**Software Competence Center Hagenberg, Austria** www.scch.at **Post Doc Researcher (AI & Data Science)**
2018.4 – 202.10	**ATOS, Nanjing, China.** (Siemens CVC acquired by ATOS) www.atos.net **Solution Architect (Big Data) / Data Scientist**
2017.08 – 2018.03	**Siemens, Nanjing, China.** (www.siemens.com) **Solution Architect (Big Data)**
2016.09 – 2017.07	**Siemens, Nanjing, China.** (www.siemens.com) **Research Intern (Big Data), Full Time**
2014.09 – 2016.08	**Global Technology Coverage, UAE** (www.globaltechcoverage.com) **(Managed Services, China Site)** **Field Engineer (Networks)**
2008.05 – 2011.08	**Shams Al Marif & MKHC, Sharjah, UAE** **Assistant Manager**
2007.11 – 2008.04	**KPK Higher Education Department, Pakistan** **Lecturer in Computer Science**
2005.11 – 2006.03	**Norsk Data (pvt) Ltd, Islamabad, Pakistan** **System Support Engineer (Peshawar GPO)**
2004.09 – 2005.10	**Global Institute of Computer Science and IT, Domel, Pakistan** **Computer Instructor**

References

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1. Prof. Wanchun Dou (Ph.D. Supervisor)
   Nanjing University, China
   douwc@nju.edu.cn

2. Prof. Shui Yu (Ph.D. Co-Supervisor)
   University of Technology Sydney (UTS)
   Sydney, Australia
   shui.yu@uts.edu.au

3. Dr. Bernhard Moser (Post Doc. Supervisor)
   Software Competence Center Hagenberg,
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   Bernhard.moser@scch.at