

## Research Interests

**Machine Learning, Reinforcement Learning Applications, Representation Learning, Reinforcement Learning in uncertain environments, Multi-Agent Learning.**

**Social Networks Analysis, Influence Maximization, Viral Marketing, Misinformation blocking .**

**Health Informatics, Applications of Machine Learning and Reinforcement Learning for health informatics such as Covid-19, Cancer Prediction.**

## Education

May, 2021 **PhD, Computer Science, National Tsing Hua University**, and Academia Sinica, Taiwan.

Thesis Title: A Learning-based Approaches to Tackle Competitive Influence Maximization on Social Networks

July, 2013 **Master of Engineering, Software Engineering, Beijing University of Posts & Telecommunications**, China.

Thesis Title: Analysis and Design of Front-End Senior Housing Management System using sipML5, WebRTC, OpenIMS, and HTML5

Jan, 2007 **Bachelor of Engineering, Software Engineering, Mehran University Engineering & Technology**, Pakistan.

## Academic

### Sukkur IBA University

Dec, 2021 – **Assistant Professor.**

Course Instructor for Software Design and Architecture, Deep Reinforcement Learning, Social Network Analysis, Software Engineering and Introduction to Programming

- Supervising BS and MS final-year students
- Mentoring undergraduate and graduate students

### Technical University of Denmark

Jan, 2023 – **Postdoctoral Research Fellow.**

March 2024 Conducting research on data centers cooling optimization using Deep Reinforcement Learning-based algorithms

- Writing Research Grant Proposals (EU and Innovation Fund Denmark Applications)

### Sukkur IBA University

Oct, 2013 **Lecturer.**

–Nov, 2021 Course Instructor for Database Management Systems, Formal Methods in Software Engineering, Web Engineering, Object-Oriented Analysis and Design, Software Design and Architecture, and Advance Software Engineering

## Research & Professional Experience

### Cool Data Centers - DTU

Jan, 2023 – **Reinforcement and Deep Reinforcement Learning for Cooling of Data Centers.**

Mar, 2024 Conducting research on data centers cooling optimization using RL and DRL-based algorithms such as online (PPO, RPPO), and offline (SAC) algorithms  
Provided Assistance to PI and Colleagues in the research section during EU grant proposals submissions and two of them got approved

Advisor : **Dr. Dominik Franjo Dominkovic**, Senior Researcher, DTU Compute, Technical University of Denmark, Denmark ([DTU Compute](#))

### Strategic Networking and Communications Laboratory:SNACLab, Academia Sinica

Aug, 2016 – **Reinforcement and Deep Reinforcement Learning for Social Networks Analysis.**

May, 2021 Proposed a novel Reinforcement and Deep Reinforcement Learning-based Methods to address Competitive Influence Maximization problem on Time-Constrained, Unknown, and Evolving Social Networks.

Advisor : **Dr. Chih-Yu Wang**, Associate Research Fellow, Research Center for Information Technology Innovation, Academia Sinica, Taiwan ([Personal Web-page](#))

### Networked Artificial Intelligence Laboratory:NetAI Lab

Sep, 2015 – **Social Networks Analysis.**

Aug, 2016 Proposed Data-Driven Based Approaches to address the Selection of Influential Users and Locations for Promotion in a Target-region on Location-based Social Networks (LBSNs)

Advisor : **Prof. Cheng-Te Li**, Associate Professor, Institute of Data Science and Department of Statistics, National Cheng Kung University, Taiwan ([Personal Web-page](#))

### PhD Graduate Fellow

Sep, 2014 – **Social Networks Analysis.**

Aug, 2015 Conducted PhD courses, passed qualifying exams, and literature review for proposed Ph.D. research Topic

Mentor: **Prof. Mi-Yen-Yeh**, Professor, Institute of Inforamtion Science, Academia Sinica, Taiwan

### Creative Chaos Private Limited

Feb, 2011 – **Senior Software Engineer.**

May, 2011 Design and Development of **UBLFund Manager, Content Management Systems**

**Responsibilities:** Requirements Collection, Clients Meeting, Business Analysts meeting

### Verge Systems Private Limited

Aug, 2007 – **Senior Software Engineer.**

Jan, 2011 Developed a ([WebHR](#)) Software - **top20** HR software in US

Developed Financial Management System, Point-of-Sale System, Inventory Management System, Micro-finance Management Systems

**Responsibilities:** Requirements Collection, Clients Meeting, Business Analysts meeting, Manage Junior Software Engineers.

### Ibn-e-Khal dun Systems

Jan, 2007 – **Trainee Programmer.**

Jun, 2007 Design and Development of **ERP Software for Textile Industry**

**Responsibilities:** Requirements Collection, Clients Meeting, Business Analysts meeting, Fine-tune oracle SQL Queries, and Report Generation Module

## Publications

### JOURNAL ARTICLES

Sarang Shaikh, Hira Farman, Muhammad Arif Hussain, Saif Hassan, and Khurshed Ali. Activation function impact on rainfall prediction: Comparative insights across ml and dl architectures. *Modeling Earth Systems and Environment*, 2025.

Manzoor Ahmed, Fang Xu, Abdul Wahid, Khurshed Ali, Muhammad Ayzed Mirza, Waliullah Khan, Kapal Dev, Syed Ali Hassan, and Zhu Han. A comprehensive survey of artificial intelligence advances in ris-assisted wireless networks. *Authorea Preprints*, 2024.

Khurshed Ali, Konstantin Filoniko, and Dominik Franjo Dominković. Cooling optimization of data centers utilizing on and off-policy deep reinforcement learning algorithms - two danish data center case studies. *Applied Intelligence (Under Review)*, x:x – xx, 2025.

Khurshed Ali, Chih-Yu Wang, , Mi-Yen Yeh, and Yi-Shin Chen. Leveraging transfer learning in deep reinforcement learning to address competitive influence maximization on unknown social networks. *(Under Review)*, x:x – xx, 2025.

Khurshed Ali, Cheng-Te Li, and Yi-Shin Chen. A data-driven based approach to promote locations with locations-transitions graph under target region in location-based social networks. *Sensors (In-Submission)*, x(x):x-x, 2024.

Muhammad Ali Shaikh, Muhammad Ismail, Pir Bakhsh, Salahudin Jokhio, Muhammad Asif Khan, and Khurshed Ali. Covid-19 sentiment analysis on x (formerly twitter) using machine learning classifiers: Performance comparison and key insights. *VFAST Transactions on Software Engineering*, 13(2):13–27, 2025.

Fang Xu, Touseef Hussain, Manzoor Ahmed, Khurshed Ali, Muhammad Ayzed Mirza, Wali Ullah Khan, Asim Ihsan, and Zhu Han. The state of ai-empowered backscatter communications: A comprehensive survey. *IEEE Internet of Things Journal*, 10(24):21763–21786, 2023.

Khurshed Ali, Chih-Yu Wang, and Yi-Shin Chen. Leveraging transfer learning in reinforcement learning to tackle competitive influence maximization. *Knowledge and Information Systems*, 64(8):2059–2090, 2022.

Noureen Fatima, Ghulam Mujtaba, Adnan Akhunzada, Khurshed Ali, Zahid Hussain Shaikh, Baby Rabia, and Javed Ahmed Shahani. Prediction of pakistani honey authenticity through machine learning. *IEEE Access*, 10:87508–87521, 2022.

Muhammad Hussain Mughal, Zubair Ahmed Shaikh, Khurshed Ali, Safdar Ali, and Saif Hassan. Ipfs and blockchain based reliability and availability improvement for integrated rivers' streamflow data. *IEEE Access*, 10:61101–61123, 2022.

Khurshed Ali, Cheng-Te Li, and Yi-Shin Chen. Joint selection of influential users and locations under target region in location-based social networks. *Sensors*, 21(3):709, 2021.

Khurshed Ali, Chih-Yu Wang, and Yi-Shin Chen. A novel nested q-learning method to tackle time-constrained competitive influence maximization. *IEEE Access*, 7:6337–6352, 2018.

Qasir Ali Memon, Abdul Qadir Rahimoon, Khurshed Ali, Muhammad Fawad Shaikh, and Shoaib Ahmed Shaikh. Determining optimum tilt angle for 1 mw photovoltaic system at sukkur, pakistan. *International Journal of Photoenergy*, 2021, 2021.

Raheel Ahmed Memon, Jian Ping Li, Junaid Ahmed, Muhammad Irshad Nazeer, Muhammad Ismail, and Khurshed Ali. Cloud-based vs. blockchain-based iot: a comparative survey and way forward. *Frontiers of Information Technology & Electronic Engineering*, 21(4):563–586, 2020.

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## CONFERENCE PUBLICATIONS

Muhammad Iskandar Java, Shintami Chusnul Hidayati, Rianarto Sarno, Yeni Anistyasari, and Khurshed Ali. Assisting neurosurgeons: Advancing brain tumor surgery with smartphone augmented reality navigation. In *2024 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT)*, pages 820–825, 2024.

Khurshed Ali, Chih-Yu Wang, Mi-Yen Yeh, Cheng-Te Li, and Yi-Shin Chen. Nedrl-cim:network embedding meets deep reinforcement learning to tackle competitive influence maximization on evolving social networks. In *2021 IEEE 8th International Conference on Data Science and Advanced Analytics (DSAA)*, pages 1–9. IEEE, 2021.

Khurshed Ali, Chih-Yu Wang, Mi-Yen Yeh, and Yi-Shin Chen. Addressing competitive influence maximization on unknown social network with deep reinforcement learning. In *2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pages 196–203. IEEE, 2020.

Khurshed Ali, Chih-Yu Wang, and Yi-Shin Chen. Boosting reinforcement learning in competitive influence maximization with transfer learning. In *2018 IEEE/WIC/ACM International Conference on Web Intelligence (WI)*, pages 395–400. IEEE, 2018.

Tzu-Yuan Chung, Khurshed Ali, and Chih-Yu Wang. Deep reinforcement learning-based approach to tackle competitive influence maximization. In *2019 ACM SigKDD Workshop on Mining and Learning with Graphs (ACM SigKDD - MLG'19)*, pages 1–8, 2019.

Raheel Ahmed Memon, Jianping Li, Junaid Ahmed, Fadia Shah, Irshad Nazir, Muhammad Ismail, and Khurshed Ali. Simulation and analysis of rsafe and rsafe rerouting protocol in network simulator 2. In *14th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP)*, pages 274–277. IEEE, 2017.

## Professional Projects

### ***UBL Fund Manager.***

The objective of this project was to develop a web-based application to assist users and investors to view their transactions and manage funds on daily basis

*Responsibilities:* Requirements collection, Schema designing, ER Diagram, Writing user Stories, and Implementation

### ***CMS: Content Management System.***

The objective of this project was to develop a complete web-based CMS system to assist users to manage their profiles and share contents with each other

*Responsibilities:* Requirements gathering, Schema designing, ER Diagram, Project Planning, writing user Stories, and Implementation

### ***WebHR: Human-Resource Management System.***

The objective of the project was to develop a complete web-based HRM Application keeping in mind the requirements of HR Department of an organization

*Responsibilities:* Requirements collection, Database design, Development of Recruitment, Employees, Payroll, Training, Reports, and Graphs modules of the Project

### ***BlueCube: Point of Sale System.***

BlueCube can be used by any small to medium-sized business to help in recording daily sales and to maintain its inventory level

*Responsibilities:* Requirements collection, Database design, Development of Recruitment, Employees, Payroll, Training, Reports, and Graphs modules of the Project

### ***FMS: Financial Management System.***

The project's goal was to design and develop complete Financial Management System. This project is developed considering the requirements of Accounts and Finance department of an Organization

*Responsibilities:* Requirements collection, Database design, Lead Junior Software Engineers, Implementation

### ***IMS: Inventory Management System.***

The project's aim was to assist retailers and shopkeepers to keep track of their assets. The System also facilitates users to maintain vehicle log book. We deployed IMS at different companies

*Responsibilities:* Requirements collection, Database design, Assist Team Members in project development, Implementation

### **MMS: Micro-fiance Management System.**

The project's objective was to develop complete a Micro finance management system. It assists credit officers to enroll daily customer loan process applications, their Payments, and view payment schedules  
*Responsibilities:* Requirements collection, Database design, Lead Junior SW engineers, Implementation

### **ERP: Enterprise Resource Planning System.**

The project's objective was to develop an ERP application for a textile industry

*Responsibilities:* Design and development of modules for ERP, Query and performance tuning for reports

## Fellowships & Awards

- 2019 Recipient of **ACM SigKDD Student Travel Grant** to attend ACM SigKDD **Knowledge Discovery and Data Mining Conference, 2019** at Anchorage, Alaska, US
- 2019 Recipient of **MOST Taiwan Travel Grant** to attend ACM SigKDD **Knowledge Discovery and Data Mining Conference, 2019** at Anchorage, Alaska, US
- 2014 –2017 **TIGP PhD Fellowship**, received PhD scholarship from TIGP, Taiwan for PhD research study at Academia Sinica and National Tsing Hua University, Taiwan
- 2011 Awarded **Master's Scholarship** from *China Scholarship Council* for study in M.E Software Engineering at Beijing University of Posts and Telecommunications, China

## Community Services

### **PC Member.**

ASONAM 2023, ASONAM 2022, ASONAM 2021

### **Reviewer.**

- IEEE TKDE Reviewer
- Applied Intelligence
- IEEE Access Reviewer
- Knowledge and Information Systems Journal
- Springer Journal on Computer Methods and Applications in Medicine
- ACM SigKDD 2017 Reviewer
- IJCAI 2017 Reviewer

## skills

Programming Languages Python, R, C, C++

ML/RL Frameworks Pytorch, Tensorflow, Stable Baselines3, Ray RLLib

Web Technologies HTML5, PHP, Javascript

Databases SQL, MySQL, Oracle

## Referees

### **Dr. Chih-Yu Wang, Associate Research Fellow.**

Research Center for Information Technology Innovation Academia Sinica, Taiwan

Dr. Wang was my PhD Thesis Advisor

✉ cywang@citi.sinica.edu.tw

### **Prof. Yi-Shin Chen, Professor.**

Department of Computer Science, National Tsing Hua University

Prof. Chen was my PhD Thesis Advisor

✉ yishin@gmail.com

### **Prof. Cheng-Te Li, Professor.**

Institute of Data Science & Department of Statistics, National Cheng Kung University, Taiwan

Prof. Li was co-advisor during my PhD study

✉ reliefli@gmail.com