

Dr. Muhammad Tausif Irshad

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Punjab University Pothohar Campus,
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Education

Ph.D. Computer Science [Apr. 2024]

University Lübeck, Lübeck, Germany

Dissertation title: “Multimodal Sensor Data Analysis for the Investigation of Physical and Mental States Using Machine Learning”

Advisor: Prof. Dr. -Ing. Marcin Grzegorzec

MS Computer Science [Feb. 2016]

Government College University (GCU), Lahore, Pakistan

Dissertation title: “Human Agent Negotiation and Software Agent Interactions”

Advisor: Dr. Syed Asad Raza Kazmi

BS Computer Science [May 2007]

Islamia University Bahawalpur (IUB), Bahawalpur, Pakistan

Research Interests

My research interests include Pattern Recognition, Machine Learning, Deep Transfer-Learning, Medical Data Science and Time-series Data Analysis. I have worked on multimodal time-series data to investigate the relationship between human flow experience and emotions and develop algorithms for the classification of human physical states (i.e., hunger and satiety) and mental states (i.e., flow and non-flow).

Journal Publications

1. **M. T. Irshad**, M. A. Nisar, P. Gouverneur, M. Rapp, and M. Grzegorzec, “Ai approaches towards prechtl’s assessment of general movements: A systematic literature review”, *Sensors*, vol. 20, no. 18, p. 5321, 2020.
2. C. Peifer, A. Pollak, O. Flak, A. Pyszka, M. A. Nisar, **M. T. Irshad**, M. Grzegorzec, B. Kordyaka, and B. Kozusznik, “The symphony of team flow in virtual teams. Using artificial intelligence for its recognition and promotion”, *Frontiers in Psychology*, p. 3538, 2021.

3. **M. T. Irshad**, M. A. Nisar, X. Huang, J. Hartz, O. Flak, F. Li, P. Gouverneur, A. Piet, K. M. Oltmanns, and M. Grzegorzec, "Sensehunger: Machine learning approach to hunger detection using wearable sensors", *Sensors*, vol. 22, no. 20, p. 7711, 2022.
4. X. Huang, K. Shirahama, **M. T. Irshad**, M. A. Nisar, A. Piet, and M. Grzegorzec, "Sleep stage classification in children using self-attention and gaussian noise data augmentation", *Sensors*, vol. 23, no. 7, p. 3446, 2023.
5. R. Doniec, J. Konior, S. Siecinski, A. Piet, **M. T. Irshad**, N. Piaseczna, M. A. Hasan, F. Li, M. A. Nisar, and M. Grzegorzec, "Sensor-based classification of primary and secondary car driver activities using convolutional neural networks", *Sensors*, vol. 23, no. 12, p. 5551, 2023.
6. **M. T. Irshad**, F. Li, M. A. Nisar, X. Huang, M. Buss, L. Kloep, C. Peifer, B. Kożusznik, and M. Grzegorzec, "Wearable-based human flow experience recognition enhanced by transfer learning methods using emotion data", *Computers in Biology and Medicine*, p. 107 489, 2023.
7. X. Huang, F. Schmelter, **M. T. Irshad**, A. Piet, M. A. Nisar, C. Sina, and M. Grzegorzec, "Optimizing sleep staging on multimodal time series: Leveraging borderline synthetic minority oversampling technique and supervised convolutional contrastive learning", *Computers in Biology and Medicine*, p. 107 501, 2023.
8. M. A. Nisar, K. Shirahama, **M. T. Irshad**, X. Huang, and M. Grzegorzec, "A hierarchical multitask learning approach for the recognition of activities of daily living using data from wearable sensors", *Sensors*, vol. 23, no. 19, p. 8234, 2023.
9. R. Doniec, E. O. Berepiki, N. Piaseczna, S. Sieciński, A. Piet, **M. T. Irshad**, E. Tkacz, M. Grzegorzec and W. Glinkowski, "Cardiovascular Disease Preliminary Diagnosis Application Using SQL Queries: Filling Diagnostic Gaps in Resource-Constrained Environments", *Applied Sciences*, vol. 14, no. 3, p.1320, 2024.
10. R. Doniec, N. Piaseczna, K. Duraj, S. Sieciński, **M. T. Irshad**, I. Karpiel, M. Urzeniczok, X. Huang, A. Piet, M. A. Nisar and M. Grzegorzec, "The detection of alcohol intoxication using electrooculography signals from smart glasses and machine learning techniques", *Systems and Soft Computing*, vol. 6, p.200078, 2024.
11. X. Huang, F. Schmelter, A. Uhlig, **M. T. Irshad**, M. A. Nisar, A. Piet, L. Jablonski, O. Witt, T. Schroder, C. Sina and M. Grzegorzec "Comparison of Feature Learning Methods for Non-invasive Interstitial Glucose Prediction Using Wearable Sensors in Healthy Cohorts: A Pilot Study", *Intelligent Medicine*, vol. 4, p. 226-238, 2024.
12. G. Ciortuz, H. H. Pour, **M. T. Irshad**, M. A. Nisar, X. Huang, and S. Fudickar "Machine learning models for wearable-based human activity recognition: A comparative study" *Neurocomputing*, p.130911, 2025.
13. S. Sieciński, **M. T. Irshad**, M. A. Hasan, R. Doniec, K. Paweł, T. Ewaryst, and M. Grzegorzec, "Assessment of quality of electrocardiograms, seismocardiograms, and gyrocardiograms based on features derived from symmetric projection attractor reconstruction in healthy subjects", *Biomedical Signal Processing and Control*, vol. 111, p. 108170, 2026.

Conference/ Workshop Publications

1. E. Bosemann, **M. T. Irshad**, H. Fischer, and M. Grzegorzec, "Evaluation of the usability of a ventilation test framework," in *Proceedings of the Student Conference of the Hanse Innovation Campus Lubeck, Germany*, March 01-03, 2023.
2. S. Siecinski, **M. T. Irshad**, M. A. Hasan, E. J. Tkacz, P. S. Kostka, and M. Grzegorzec, "Symmetric projection attractor reconstruction analysis as a method to assess seismocardiogram quality in a healthy population," in *45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Sydney, Australia, July 24-27, 2023.
3. M. A. Hasan, F. Li, A. Piet, P. Gouverneur, **M. T. Irshad**, and M. Grzegorzec, "Exploring the benefits of time series data augmentation for wearable human activity recognition," in *8th International Workshop on Sensor-based Activity Recognition and Artificial Intelligence (iWOAR)*, Lubeck, Germany, September 21-21, 2023.

Poster Presentations

4. E. Bosemann, **M. T. Irshad**, H. Fischer, and M. Grzegorzek, "Evaluation of the usability of a ventilation test framework," in Proceedings of the Student Conference of the Hanse Innovation Campus Lubeck, Germany, March 01-03, 2023.
5. L. Kloep, M. Buss, M. Grzegorzek, **M. T. Irshad**, P. Gouverneur, B. Kozusznik, A. Pollak and C. Peifer, "A computational approach to understand social flow and its role in interpersonal relationships in virtual teams – project outline and first results from a pilot study," in 21th Annual Congress of the European Association of Work and Organizational Psychology (EAWOP), Katowice, Poland, May 24-27, 2023.
6. S. Siecinski, **M. T. Irshad**, M. A. Hasan, E. J. Tkacz, and M. Grzegorzek, "Assessment of quality of gyrocardiograms based on features derived from symmetric projection attractor reconstruction," in 8th International Workshop on Sensor-based Activity Recognition and Artificial Intelligence (iWOAR), Lubeck, Germany, September 21-21, 2023.

Languages/ Tests

- English
- Urdu (National Language)
- Punjabi (Native Language)
- Microsoft® .NET Framework - Application Development Foundation: 90.70% (Aug. 2009)

Certifications/ Memberships

- Microsoft® .NET Framework - Application Development Foundation (Aug.2009)
- Data Protection and Awareness, University of Luebeck, Germany (Mar. 2024)
- ACM - Association for Computing Machinery (Jul. 2024)

Employment, University of the Punjab, Pakistan

Incharge, Pothohar Campus

Aug. 2025 – Present

Responsibilities: Oversee the overall operations and management of the campus, handling strategic planning and implementation, academic leadership, and quality assurance. I look after student affairs and welfare, faculty management, and development, while also being responsible for campus administration, budget planning, and financial management. Additionally, I focus on infrastructure development, making sure the campus runs smoothly and effectively.

Assistant Professor IT

Feb. 2025 – Present

Courses: Database Systems, Applications of Information and Communication Technologies, Web Engineering, Programming Fundamentals, Object Oriented Programming, Data Structures, Artificial Intelligence.

Software Engineer

Jun. 2014 – Jan. 2025

Worked as a Software Engineer at the research and development section of Faculty of Computing and Information Technology/ PUCIT, named as Agile Technologies. My responsibilities include the management and customization of open-source software projects. In particular, I manage and enhance PUCIT Campus Management System (CMS), PUCIT admission system, and PUCIT entry test system.

Visiting Lecturer

Jun. 2012 – Sep. 2017

Worked as a visiting teacher/ lecturer, for certification course “Web Engineering with PHP”, at Punjab University College of Information and Technology (PUCIT).

Jr. Software Engineer

Apr. 2010 – May 2014

Worked as a Jr. Software Engineer at Agile Technologies, research and development section of PUCIT. My responsibilities include the development and providing support for various automated solutions to the university. In particular, I developed/customized the add-drop, attendance, clearance, and challan fee modules of the CMS.

Other Research and Development Experiences

Research Associate

Apr. 2019 – Apr. 2024

Worked as a research associate (at Medical Data Science Group, University of Lübeck, Germany) on SENSE and V-T-Flow projects. My work includes investigating emotions that can enhance human flow recognition, analyzing multimodal time-series data, and developing a flow experience recognition system and non-invasive hunger and satiety detection system using multimodal wearables data and machine learning.

Research Assistant

Jan. 2018 – Mar. 2019

Worked as a research assistant (at Pattern Recognition Group, University of Siegen, Germany) on the "my-AHA - my Active and Healthy Aging" project. My work involves analyzing time-series data and designing and developing an elderly risk prediction model using wearable sensor data with the fusion of multi-modal information.

Web Developer

Jan. 2007 – Mar. 2010

Worked for various projects in the private web/software development industry, Lahore, Pakistan. My responsibility includes the front-end and back-end design and development of web-based projects using MS SQL server, ASP.Net, and C#.