

# MUHAMMAD ZOHAIB HASSAN SHAH

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## RESEARCH INTERESTS

**Machine Learning:** Deep learning, Manifold learning, Information theory.

**Mathematics:** Riemannian, Algebraic, Information Geometry.

**Applications:** Neuroscience, Statistical process monitoring, Data analysis.

## EDUCATION

**Artificial Intelligence Research Institute, Zhejiang Lab, China** **2022 – Present**

Postdoctoral Fellow (Mentor: Prof. Dr. Dongping Yang)

**Project:** Studying the duality of sleep stage 2 and staging.

**Shanghai Jiao Tong University (SJTU), China** **2017 – 2022**

PhD. Control Science and Engineering (Supervisor: Prof. Dr. Hu Lisheng)

**Thesis:** On Feature Extraction based manifold learning and applications.

**COMSATS Institute of Information Technology, Pakistan** **2013 – 2016**

MS. Electrical Engineering

**Thesis:** Implementation of Wind Turbine System for Fault Tolerant control.

**University of Engineering & Technology Taxila, Pakistan** **2008 – 2012**

BSc. Electrical Engineering

**Thesis:** Design of a Scheme for Automatic Power Factor Improvement.

## PUBLICATIONS

1. T. Liu, **Z. Hassan**, X. Yan, and D.P. Yang, "Unsupervised Feature Representation Based on Deep Boltzmann Machine for Seizure Detection". **IEEE Transactions on NEURAL SYSTEMS AND REHABILITATION ENGINEERING (Q1)**, **2023**, [doi](https://doi.org/10.1109/TNSRE.2023.3253821)10.1109/TNSRE.2023.3253821, **IF = 4.528**.
2. **Z. Hassan**, L. Hu, and Z. Ahmed, "Weighted Linear Local Tangent Space Alignment via Geometrically Inspired Weighted PCA for Fault Detection". **IEEE Transactions on Industrial Informatics (Q1)**, **2022**, [doi](https://doi.org/10.1109/TII.2022.3166784)10.1109/TII.2022.3166784, **IF = 10.215**.
3. **Z. Hassan**, L. Hu, and Z. Ahmed, "Modified LPP based on Riemannian metric for feature extraction and fault detection". **Measurement (Q1)**, **2022** [doi](https://doi.org/10.1016/j.measurement.2022.110923)10.1016/j.measurement.2022.110923, **IF = 3.927**.
4. **Z. Hassan**, L. Hu, and Z. Ahmed, "Feature extraction and fault detection scheme via improved locality preserving projection and SVDD". **Transactions of the Institute of Measurement and Control**, **2022**. [doi](https://doi.org/10.1177/01423312221099855)10.1177/01423312221099855.

5. M. Aslam, Z. Ahmed, and **Z. Hassan**, "An overview of Recent Advances of Resilient consensus for Multi agent systems under Attacks". Computational Intelligence and Neuroscience. [doi](https://doi.org/10.1155/2022/6732343)10.1155/2022/6732343.
6. **Z. Hassan**, L. Hu, and T. Humayun, "Unsupervised Feature Representation of Sleep EEG Data with Transient Deep Boltzmann Machine". EMBC, 2023.
7. **Z. Hassan**, L. Hu, and T. Humayun, "Design and Implementation of a Robust FTC scheme for the Benchmark model of Wind Turbine System". PGSRET, 2018, [doi](https://doi.org/10.1109/PGSRET.2018.8685997)10.1109/PGSRET.2018.8685997.

## EXPERIENCE

### Saba Power Plant Pvt. Ltd. Lahore, Pakistan

Jul 2014 – May 2017

Assistant Electrical Engineer.

- Worked on TOSHIBA generator & Steam turbines.134MW, B&W (Babcock & Wilcox) 435 t/h.
- Worked on control system of major plant processes and electrical equipment.
- Configuration, programming of PLC, DCS, relays and related equipment.

### IEC Pvt. Ltd. Lahore, Pakistan

Oct 2012 – Mar 2014

Production Engineer.

- Worked on diesel engine generator set having rating up to 1250KVA (Deutz, Perkins, Listerpetter engines with Leroy-Somers alternators as OEM.
- Configuration of ATS, AMF panel designing and engine control modules.

## TECHNICAL SKILLS

**Languages:** Python (numpy, scipy, sklearn, tensorflow, theano, matplotlib, pytorch, pandas,...),  $\LaTeX$ .  
**Applications:** Matlab, Mathematica, Microsoft Office.  
**Platforms:** Linux, Windows.

## GRANTS & AWARDS

- Third prize in "China Through My Eyes" video contest.
- Second prize in the final year project.
- Chinese government full scholarship by chinese scholarship council.

## REFEREES

- **Prof. Lisheng Hu, PhD.**

Professor

School of Electronics, Information and Electrical Engineering, Shanghai Jiao Tong University, China

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- **Prof. Muhammad Mansoor Khan, PhD.**

Associate Professor

School of Electronics, Information and Electrical Engineering, Shanghai Jiao Tong University, China

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- **Prof. Mirza Tariq Hamayun, PhD.**

Associate Professor

School of Electrical Engineering, COMSATS Institute of Information & Technology Lahore, Pakistan

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