Dr Komal Masroor

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RESEARCH INTERESTS

- **Image Processing & Computer Vision**
- **Machine learning/ Deep learning**
- **Visible Light Communication**
- **Optical Wireless Communications**
- **Body Sensor Networks**
- **Human Body Communication**

EXPERIENCE

WORKING EXPERIENCE: 15+ YEARS

Name of Institution	Department	Position	Period	
			From	To
NED University of Engineering & Technology, Pakistan	Telecommunications Engineering	Assistant Professor	Dec. 2022	Till date
Universiti Teknologi PETRONAS, Malaysia	Department of Electrical and Electronic Engineering	Graduate Assistant	April 2019	Sep. 2022
Universiti Teknologi PETRONAS, Malaysia	Department of Electrical and Electronic Engineering	Graduate Research Assistant	April 2017	March 2019
NED University of Engineering & Technology, Pakistan	Telecommunications Engineering	Lecturer	April 2010	Dec. 2022

TEACHING EXPERIENCE

- Communication Systems
- Digital Image Processing
- Digital Logic Design
- Signals and Systems
- Basic Electronics
- Engineering Drawing and Workshop

COURSE DEVELOPMENT AND REVISION

- TC-317 Artificial Intelligence & Machine Learning
- TC-427 Digital Image Processing
- TC-212 Digital Signal Processing
- TC-155 Engineering Drawing & Workshop

LABORATORY MANUAL DEVELOPMENT AND REVISION

- Computer Programming
- Engineering Drawing and Workshop

ADMINISTRATIVE EXPERIENCE

- OBE Committee Member
- Class Adviser, First year Engineering
- Student Counsellor
- In Charge and Founding Member of NED Photography Society
- Lab In charge: Project Laboratory
- Lab In charge: Optical Fiber Laboratory
- Lab Coordinator
- Program Team Member to prepare Self-Assessment Report for accreditation of Master of Telecommunications

COMMITTEE MEMBERSHIPS

- Organizer, Technical Committee Member, of the International Conference on Technology Driven Climate Actions (CLIMATECH-2025) to be held in January 2025
- Organizer, International Conference on Technology Driven Climate Actions (CLIMATECH-2023)
- Hosted the International Conference on Technology Driven Climate Actions (CLIMATECH-2023)
- Organizer, Publication Committee Member, International Conference on Emerging trends in Electronics and Telecommunications Engineering (INTERACT'23)

EDUCATION

PhD in Electrical & Electronic Engineering (2017-2022)
Universiti Teknologi PETRONAS, Malaysia
Area of Specialization: Visible Light Communication, Body Area Networks, Patient Monitoring
Thesis Title: On Remote Patient Monitoring Using Optical Wireless Communication: Improving SNR Uniformity Heuristically

Masters in Telecommunications Engineering (2010-2013)
NED University of Engineering and Technology, Karachi Pakistan
CGPA: 3.81/4.0

Bachelors in Telecommunications Engineering (2006-2009)
NED University of Engineering and Technology, Karachi Pakistan
Percentage = 85.5 %
Senior Design Project: Target Locking and Tracking System; implemented in MATLAB it provided target locking that followed an object over an arbitrary path even if it simultaneously changed its size.

PUBLICATIONS

- **Masroor ,K.,** Khan D. M., Khan H. R., Arshad K., Assaleh, K. (2024) *Deciphering Default Mode Network Dynamics in Alcohol Use Disorder through Directed Transfer Function Analysis of EEG*, **IEEE Access**

- Huda, S., Khan, D. M., **Masroor, K**., Rashid, A., & Shabbir, M. (2024). *Advancements in automated diagnosis of autism spectrum disorder through deep learning and resting-state functional MRI biomarkers: a systematic review*. **Cognitive Neurodynamics**, 1-17.

- Rahman, N., Khan, D. M., **Masroor, K**., Arshad, M., Rafiq, A., & Fahim, S. M. (2024). *Advances in brain-computer interface for decoding speech imagery from EEG signals: a systematic review*. **Cognitive Neurodynamics**, 1-19.

- Khan, D. M., **Masroor, K**., Jailani, M. F. M., Yahya, N., Yusoff, M. Z., & Khan, S. M. (2022). Development of wavelet coherence EEG as a biomarker for diagnosis of major depressive disorder. **IEEE Sensors Journal**, 22(5), 4315-4325.

- **Masroor, K.,** Mumtaz, S., Drieberg, M., & Jeoti, V. (2022, November). *Optical wireless communication based wireless body area network for remote patient monitoring*. In **International Conference on Artificial Intelligence for Smart Community: AISC 2020**, 17–18 December, Universiti Teknologi Petronas, Malaysia (pp. 985-991). Singapore: Springer Nature Singapore.

- Mumtaz, S., Aziz, A. A., & **Masroor, K**. (2022, November). *On the Performance of MIMO-UVLC System over Turbulence-induced Fading Channels*. In **International Conference on Artificial Intelligence for Smart Community: AISC 2020,** 17–18 December, Universiti Teknologi Petronas, Malaysia (pp. 373-383). Singapore: Springer Nature Singapore.

- **Masroor K**, Jeoti V, Drieberg M, Cheab S, Rajbhandari S. "*A Heuristic Approach for Optical Transceiver Placement to Optimize SNR and Illuminance Uniformities of an Optical Body Area Network*." **Sensors**. 2021; 21(9):2943.

- **Masroor, K**., Jeoti, V., & Drieberg, M., "*Analysing the Effects of LED Lamp Arrangements on Performance of an Indoor Visible Light Communication System*", **IEEE 14th Malaysia International Conference on Communication (MICC), IEEE**: 2019, pp. 54-58.

- **Masroor, K.**, Jeoti, V., & Drieberg, M., *"Improving the Energy Efficiency of a Wireless Body Area Network Using a Redundant Coordinator for Healthcare Applications"*, **International Conference on Intelligent and Advanced System (ICIAS), IEEE**: 2018, pp. 1-5.

PROFESSIONAL & DEPARTMENTAL TRAININGS

- OBE Implementation in TCD and ELD, 2024.
- QEC Training: Development of SAR as per HEC Guidelines, 2023.
- QEC Training on Effective Workplace Communication: Principles & Practices, 2023.
- OBE-based CEP/CEA assessment, 2023.
- Roles of invigilators and examiners, 2023.
- OBE-based assessment and course file preparation, 2023.
- QEC training on Effective Communication Skills, 2023.
- Teaching Pedagogies, 2023.
- Uniform OBE framework (design and implementation), 2022.
- Assessment Domains and CQI, 2022.
- Data Entry and management in OBE and MIS, 2022.
- Effective Teaching Methodologies, 2011.
- 3M's training on Fiber Splicing methods, 2011.
- Advanced GSM HUAWEI Equipment, University of Engineering & Technology, Lahore, Pakistan, 2010.

PROFESSIONAL CERTIFICATIONS

- *"Supervised Machine Learning: Regression and Classification"* by DeepLearning.AI offered through HEC-DLSEI and Coursera
- *"Introduction to Data Science"* by IBM offered through Coursera offered through HEC-DLSEI and Coursera

PROFESSIONAL MEMBERSHIPS

- Pakistan Engineering Council (Lifetime Membership)
- The Institution of Engineers, Pakistan

GRANTS & FUNDINGS

- NEDAASC funding for FYDP titled 'Design and Development of EEG-based Cursor Control System'.
- Travel grant from UTP to present in IEEE 14th Malaysia International Conference on Communication (MICC), Bangi, Selangor, Malaysia.
- MDPI Sensors publication funding from Yayasan Universiti Teknologi PETRONAS.

RECENT SUPERVISING & MENTORING

- Explainable AI (XAI)-based Automated System for Diagnosing Alzheimer's Disease using EEG Signal Data (FYDP: Completed, Supervisor)
- Design and Development of EEG-based Cursor Control System (FYDP: Completed, Supervisor)
- Faulty Object Detection on a Supply Chain using Image Processing (FYDP: Completed, Supervisor)
- Real Time AI-Based Emotion Detection in Speech Signals for Enhancing Emotional Understanding of Autikids (FYDP: Completed, Supervisor)
- Automated diagnosis of Autism Spectrum Disorder using deep learning and resting-state functional MRI biomarkers (FYDP: Completed, Supervisor)
- A Deep Learning and Cloud Based IoT Integrated System for Decoding Speech Imagery EEG Signals (FYDP: Completed, Co-Supervisor)
- Face detection and recognition using CUDA architecture (GPU) (FYDP: Completed, Supervisor)
- Automatic Number Plate Recognition' for Local/ Customized Number Plates using Image Processing (FYDP: Completed, Supervisor)
- Panic Detection in Crowds/Processions using Image Processing (FYDP: Completed, Co-Supervisor)

COMPUTER SKILLS

- MATLAB
- Overleaf/LaTEX
- End-Note
- Microsoft Office
- Verilog HDL
- TracePro: Software for Design and Analysis of Illumination and Optical Systems

LANGUAGE SKILLS

- English: Read, Write, Speak, Understand
- Urdu: Read, Write, Speak, Understand