

Paras Qadir Memon

PhD Candidate · Neural Decoding & Non-Invasive Brain-Computer Interfaces

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Website YouTube LinkedIn Google Scholar

Summary

PhD candidate in Computer Science (expected October 2026) specializing in neural time-series representation learning and non-invasive BCI decoding from EEG. Owns the full research pipeline: electrode configuration, signal acquisition, multi-stage preprocessing with deep learning models.

Technical Skills

Programming: Python, R, C++ **Frameworks:** PyTorch, TensorFlow, CNN, SVM, KNN, self-supervised learning, LLMs

Neural Signal Processing: EEG preprocessing, artifact rejection, feature extraction, PCA, ICA, multi-channel pipelines, neural decoding, time-series representation learning

Computing: Multi-GPU/multi-node distributed training, large-scale training run evaluation

Experience

Colorado State University

Fort Collins, CO

Computational Neuroscience EEG, PhD Researcher

Expected October 2026

- Built ML models to decode neural signals for speech/auditory BCI applications from multi-channel EEG, achieving 86.25% accuracy on a 16-participant dataset (12% improvement via electrode-configuration and segmentation ablations).
- Designed multi-stage EEG preprocessing pipelines covering noise reduction, artifact rejection, feature extraction, and dimensionality reduction (PCA, ICA) — owned end to end through publication.

Sukkur IBA University

Sukkur, Pakistan

Assistant Professor, Department of Computer Science

October 2015 – Jan 2026

- Delivered undergraduate and graduate courses in machine learning, neural networks, data structures, and programming to 500+ students over 10 years; supervised final-year and postgraduate research projects.
- Developed HEC-aligned curriculum for new courses in data science and artificial intelligence.

Research Projects

Comparative Analysis of TCRE and Conventional Electrodes for Overt and Covert Speech [Published – *Sensors*, 2026]

- Benchmarked KNN, CNN, and FCNN on a 16-participant, 40–64 channel EEG dataset using novel tri-polar concentric ring electrodes (TCRE); achieved 86.25% max accuracy via electrode-configuration analysis and peak-interval segmentation (0.5–1.2 s).

Overt and Covert Speech-State Classification from TCRE EEG: A 4 mm and 10 mm Configuration Study [Under Review — *MDPI Sensors*]

- Introduced and evaluated a novel 4 mm TCRE configuration for speech-state classification; compared against the established 10 mm configuration. Manuscript under review.

Longitudinal EEG Analysis of Treatment Response to Transcranial Focal Stimulation in Epilepsy [In Progress]

- Analyzing EEG spectral features (theta, alpha, beta, slow waves) across four timepoints (baseline, post-therapy, 1-month, 2-month) to track TFS treatment response in temporal lobe epilepsy patients.

Professional Service and Peer Review

Program Committee Member

2017–2018

iCoMET – International Conference on Computing, Mathematics and Engineering Technologies (2018)

External Reviewer / Subreviewer

2017

ICCMS – International Conference on Computer and Mathematics Sciences (2017)

Journal Reviewer — IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE)

Reviewer profile maintained on Web of Science (Publons)

Education

Colorado State University – PhD, Computer Science

Expected October 2026

Universiti Teknologi PETRONAS – MSc, Information Technology

Honors and Awards

Fulbright Foreign Student Program — PhD Scholarship

U.S. Department of State, Bureau of Educational and Cultural Affairs

Competitively selected from a global applicant pool across 160+ countries for outstanding academic achievement and research excellence in computer science and brain-computer interfaces.

Global UGRAD Exchange Program — Fulbright Scholarship

U.S. Department of State, Bureau of Educational and Cultural Affairs

Awarded to outstanding undergraduate students worldwide for academic merit and leadership potential; completed exchange semester at Shawnee State University, USA.

Recent Publications

- **Memon, P.Q.** (corr. author), Anderson, C., and Qadir, Z. (2026). Comparative Analysis of Tri-Polar Concentric Ring and Conventional Electrodes for Overt and Covert Speech. *Sensors*, 26(13), 4084. **Published.**
- **Memon, P.Q.** (corr. author), Besio, W., and Anderson, C. (2026). Overt and Covert Speech-State Classification from TCRE EEG: A 4 mm and 10 mm Configuration Study. *MDPI Sensors*. **Under Review.**
- **Memon, P.Q.** (corr. author), Besio, W., and Anderson, C. (2026). Longitudinal EEG Analysis of Treatment Response to Transcranial Focal Stimulation in Epilepsy. *In Preparation.*

Earlier Publications

- **Book Chapter: P.Q. Memon**, S.-P. Yong, W. Pao, J.S. Pau. Dynamic Well Bottom-Hole Flowing Pressure Prediction Using a Radial Basis Neural Network. *Studies in Computational Intelligence*, Springer.
- **Book Chapter: P.Q. Memon**, S.-P. Yong, W. Pao. Surrogate Reservoir Model for Average Reservoir Pressure. *SAI Intelligent Systems Conference*, Springer, 2016.
- **P.Q. Memon**, S.-P. Yong, W. Pao, J.S. Pau. Surrogate Reservoir Modeling: Bottom-Hole Flowing Pressure via Radial Basis Neural Network. *Science and Information Conference*, London, 2014.
- **P.Q. Memon**, S.-P. Yong, W. Pao. Dynamic Surrogate Reservoir Model with Well Constraints. *ICCOINS*, Malaysia, 2016.
- **P.Q. Memon**, S.-P. Yong, W. Pao. Bottom-Hole Flowing Pressure via General Regression Neural Network. *ICCOINS*, IEEE, 2014.
- **P.Q. Memon**, S.-P. Yong, W. Pao. Preliminary Study on a Well-Based Surrogate Reservoir Model. *IEEE SCORED*, 2013.
- J.S. Pau, W.K.S. Pao, S.-P. Yong, **P.Q. Memon**. Effects of Capillary Pressure on Multiphase Flow During CO₂ Injection in a Saline Aquifer, 2014.
- J.S. Pau, W.K.S. Pao, S.-P. Yong, **P.Q. Memon**. Evaluation of Relative Permeability Models in a CO₂/Brine System. 2016.
- J.S. Pau, W.K.S. Pao, S.-P. Yong, **P.Q. Memon**. Capillary Pressure and Buoyancy Effects in CO₂/Brine Flow. *WIT Transactions on Ecology and the Environment*, vol. 186, pp. 613–624, 2014.