Pawan Kumar Thapaliya

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Summary

PhD Candidate in Applied Physics with expertise in computational neuroscience, quantitative MRI, and deep learning. Experienced in modeling neuron–astrocyte interactions under metabolic stress (stroke, epilepsy) and applying machine learning to DWI/ADC MRI, EEG, and imaging data. Strong record of publications, conference presentations, and interdisciplinary collaborations.

Education

University of South Florida, Tampa, FL
Ph.D. in Applied Physics (Computational Biophysics & Neurobiology) **Expected May 2026**

University of Texas Rio Grande Valley, Brownsville, TX
M.S. in Physics (Computational Biophysics of DNA Stability) **2019**

Tribhuvan University, Nepal
M.Sc. in Physics (Solid State Physics & Biophysics), 2011 — B.Sc. in Physics, 2009

Research Experience

Quantitative MRI & Deep Learning Intern – Moffitt Cancer Center, Tampa, FL **Jul 2025 – Present**
Advisor: Dr. Tess Armstrong

- Optimizing diffusion MRI protocols using phantoms to improve diffusion coefficient estimation.
- Conducting **DWI and ADC image analysis, segmentation, and classification** for quantitative biomarker extraction.
- Developing deep learning workflows for MRI reconstruction, feature extraction, and reproducibility testing.
- Integrating advanced MRI metrics with automated pipelines for translational imaging research.

PhD Candidate / **Researcher** – University of South Florida, Tampa, FL **Aug 2019 – Present**
Advisor: Dr. Ghanim Ullah

- Modeled astrocytic and neuronal sodium, calcium, and ATP dynamics under ischemia and epilepsy.
- Investigated NMDA/AMPA receptors, NBCe1, and NCX1 in excitotoxicity and energy imbalance.
- Published **2 first-author papers** and presented at **SfN and USF Research Day**.
- Applied CNNs/LSTMs to EEG and imaging data for biomarker discovery and model validation.

MS Researcher – University of Texas Rio Grande Valley, Brownsville, TX **Aug 2016 – Jul 2019**
Advisor: Dr. Andreas Hanke

- Simulated DNA stability via Monte Carlo methods; studied base pair stacking interactions.

Selected Publications

- **Thapaliya, P.**, et al. (2023). *Modeling sodium & calcium homeostasis in astrocytes.* Frontiers in Cellular Neuroscience. [DOI] [Code]
- Everaerts, K., **Thapaliya, P.**, et al. (2023). *Astrocytic Na^+ loading via NBCe1 during ischemia.* Cells. [DOI] [Code]

Technical Skills

– **MRI & Imaging:** DWI/ADC analysis, segmentation, classification, qMRI biomarker extraction.

– **Modeling/Simulation:** Biophysical models, Markov models, ODE/PDE solvers, Monte Carlo.

– **Programming:** Python, R, MATLAB, Bash, FORTRAN, SQL.

– **ML/DL:** PyTorch, TensorFlow, scikit-learn, Keras, CNNs, VAEs, LSTMs.

– **Signal Processing:** EEG analysis, image reconstruction, feature extraction.

– **Tools:** Git/GitHub, CUDA, Linux, Google Cloud.

Awards & Fellowships

- Trainee Professional Development Award – Society for Neuroscience, 2024
- Signature Doctoral Research Fellowship – USF, 2024–2026
- Tharp & Duckwall Summer Research Fellowship – USF, 2024

Leadership & Service

- Community Leader – SfN Neuronline, 2025–Present
- Secretary – USF Physics Graduate Student Committee, 2024–Present
- Judge – Regeneron ISEF & USF Health Research Day