Adarsha Bhattarai

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Education

University of Nebraska-Lincoln Aug 2021 – Present
PhD in Engineering, Specialization in Computer Engineering; Cumulative GPA: 3.93/4.0 *Omaha, NE*
Coursework: Digital Signal Processing, Image Processing, Computer Vision, Machine Learning, Random Processes

Istanbul University Aug 2017 – June 2021
B.S. in Electrical and Electronics Engineering *Istanbul, Turkey*

Academic and Industry Experience

University of Nebraska-Lincoln Jan 2024 – May 2024
Lecturer *Omaha, NE*

- Lectured over 20 students in Computer Science I, covering core C programming principles such as data structures, algorithms, and memory management.
- Incorporated more than 14 exercises and real-world problem-solving tasks to reinforce concepts, with a focus on testing, debugging, and improving coding practices.

Endless Health June 2023 – Aug 2023
R&D Intern *Remote*

- Collaborated with Stanford PhD and CEO Cooper Galvin to develop an AI-based health assessment platform.
- Preprocessed a food dataset of 19,310 categories using ChatGPT API, with the dataset posted on Hugging Face.
- Developed and launched the Heart-GPT **prototype** for diet recommendations, including full pipeline setup and Python code for fine-tuning Meta's LLaMA 2.0 in GCP; project available on GitHub.

University of Nebraska-Lincoln Jan 2022 – Present
Teaching Assistant *Omaha, NE*

- Host 50+ students in C Programming labs, emphasizing programming principles, testing, and debugging.
- Coordinate Digital Design lab sessions, mentoring 30+ students in unit testing and Verilog Design optimization.
- Granted the **Holling Fellowship** for exceptional performance as a graduate teaching assistant.

University of Nebraska-Lincoln Aug 2021 – Present
Research Assistant *Omaha, NE*

- Secured **GRACA Grant** funding at the University of Nebraska Omaha for research in medical technologies.
- Collaborated with **radiology experts** to accelerate data acquisition by up to 90% for MRI using genetic algorithm and deep learning algorithms.
- Preprocessed the 4D in vivo mice brain **MRI** dataset by performing B0 correction, removing noise, image segmentation, and conducting registration to prepare it for deep learning analysis.
- Involved in neuroimaging research to study brain network connectivity using mice MRI data and seed-based analysis in FSL; abstract presented at **Neuroscience** 2024.

Furmak Machinery Jan 2021 – Feb 2021
Industry Intern *Istanbul, Turkey*

- Gained hands-on experience in textile engineering, automation, CNC machining, and laser technology operations.
- Enhanced client communication and branding efficiency by 2x through translation support, social media management, and promotional material design.

Kilic Machine and Automation June 2020 – September 2020
Industry Intern *Istanbul, Turkey*

- Built and installed 4+ electrical circuit boards integrating servo motors, stepper motors, motor drivers, sensors, and PLCs for **machine automation** in artificial turf manufacturing, reducing circuit board size by 25%. Portfolio.

Koc University June 2019 – August 2019
Research Intern *Istanbul, Turkey*

- Exposed to the communication lab of pioneering scientist, Ertugrul Basar.
- Proposed and implemented 3+ innovative smart home applications using IoT U3800 from Keysight Technologies.
- Developed **software solutions** using C, Python, Google Scripts, Putty, WinSCP, and Digi XCTU, resulting in 2x faster execution.

Award-Winning Projects

Enhancing Medical Sensors | *Python, Flask, MATLAB, Insomnia API* Jan 2022 – Jan 2024

- Co-developed a 2D CNN-based computing architecture for electrocardiogram (ECG) time series data from sensors, in collaboration with a **cardiologist** from the University of Nebraska Medical Center, achieving 99.3% accuracy.
- Enabled patient data recovery in low signal-to-noise ratio conditions as low as -8.75 dB.
- Designed a medical blockchain using Python, Insomnia API, and Flask to authenticate nodes and secure database.
- Awarded **Best Research Paper** at IEEE CCWC 2024 under sensor networks and embedded system track.

ML-Driven Optimization | *Python, MATLAB, C* Jan 2022 – March 2024

- Optimized power and data transmission for wearable ECG sensors using ML-driven communication strategies.
- Boosted communication efficiency up to 6 times.
- Recognized as **Best Graduate Student** Presentation by the Univ. of Nebraska at 2024 Research and Creativity Fair.

Technical Skills and Certifications

Predictive and Generative Modeling: Convolutional Neural Networks, Autoencoders, U-Net, NLP, Fine-tuning LLM
Programming Languages: Python, C/C++, MATLAB **Libraries**: PyTorch, NumPy, Pandas, Keras, TensorFlow
Certifications: AI in Healthcare (Stanford University School of Medicine), AI for Medical Diagnosis (DeepLearning.AI)
Accelerated Computing: CUDA, RAPIDS cuML, Holland Computing Center (Fastest in Nebraska)

Relevant Publications

Bhattarai et al."Frequency Offset Selection and Deep Learning for Rapid CEST MRI Data Acquisition."ISMRM. In Review.
Bhattarai et al. "Enhancing Wearable ECG Sensors." IEEE CCWC, 2024.
Bhattarai et al. "An Integrated Secure Efficient Computing Architecture for ECG Diagnosis." *S. Nature CS*, 2022.
Authored 4 journal articles, 6 conference presentations, and contributed to 2 book chapters. More at Google Scholar.

Leadership and Community Engagement

IEEE Young Professional Member, USA
International Society for Magnetic Resonance in Medicine (ISMRM) Trainee Member, USA