Adarsha Bhattarai

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Summary

Electrical and Electronics Engineer with over **3 years** of industry and academic experience. Currently pursuing a **PhD** focused on **Computer Engineering**. Skilled in **AI-driven** medical applications, **digital signal processing**, **sensors**, and **embedded systems**. **Innovated** and **optimized** ECG sensor technology with **machine learning** in collaboration with cardiologists. **Enhanced MRI imaging** techniques using **deep learning** in collaboration with radiologists. **Instructs C/C++ programming** and **microprocessor design** using **Verilog**. Recognized for **award-winning** projects and impactful publications in **IEEE** and **Springer Nature**.

Education

University of Nebraska-Lincoln Aug 2021 – July 2025
PhD in Engineering, Specialization in Computer Engineering; Cumulative GPA: 3.93/4.0 *Omaha, NE*
Coursework: Digital Signal Processing, Machine Learning, Image Processing, Computer Vision

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

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.
- Implemented a cryptography algorithm in MATLAB to conceal patient information within physiological signals.
- 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** Presentation by the Univ. of Nebraska at 2024 Research and Creativity Fair.

Academic and Industry Experience

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

- Instruct 50+ students in C Programming, 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*

- Collaborate with **radiology experts** to reduce scan time for MRI using genetic algorithm and auto-encoders.
- Preprocess 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.
- Accelerate data acquisition by up to 90% using deep learning algorithms, improving **clinical** imaging turnaround.
- Involved in neuroimaging research to study brain network connectivity using mice MRI data and seed-based analysis in FSL; abstract presented at **Neuroscience** 2024.
- Crafted NSF/NIH proposals; secured $5,000.00 in funding through GRACA in 2023.

Endless Health June 2023 – Aug 2023
R&D Intern (startup focused on improving heart health; 11-50 employees) *Austin, TX*

- Fine-tuned Meta's generative AI (LLaMA 2.0) in GCP to assess the risk of developing heart diseases.
- Categorized 19,310 food categories and validated findings with ChatGPT predictions, achieving 80% accuracy.
- Launched Heart-GPT **prototype** for diet recommendations in a mobile app.

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%.

Koc University June 2019 – August 2019
Research Intern (communication lab of pioneer scientist, Ertugrul Basar) *Istanbul, Turkey*

- Proposed and implemented 3+ innovative smart home applications using IoT Kit from Keysight Technologies.
- Developed **software solutions** using C, Python, Google Scripts, Putty, WinSCP, and Digi XCTU, resulting in 2x faster execution.

Technical Skills and Certifications

Computer Science: Data Mining, Data Structure, Machine Learning, Software Design, Testing and Debugging
Programming Languages: Python, C/C++, R, MATLAB **Libraries**: PyTorch, NumPy, Pandas, TensorFlow
Certifications: AI in Healthcare (Stanford University School of Medicine), AI for Medical Diagnosis (DeepLearning.AI)

Publications

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 3 journal articles, 5 conference presentations, and contributed to 2 book chapters. More at Google Scholar.