Rahul Ranjan

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OBJECTIVE

Seeking a challenging research and development position in HealthTech or AI, with a focus on applying deep learning, computer vision, and biomedical signal processing to develop innovative mobile health monitoring solutions.

EDUCATION

Master of Artificial Intelligence, 2023 – 2025
Monash University, Melbourne, Australia

B.E. (Hons.) Electronics & Instrumentation, 2017 – 2022
M.Sc. (Hons.) Physics (Dual Degree Program)
Birla Institute of Technology and Science (BITS), Pilani, India

TECHNICAL SKILLS

Programming Languages: Python, SQL, Java, R, MATLAB, C++
Machine Learning/DL: PyTorch, TensorFlow, Scikit-learn, Keras, OpenCV
Data Tools: Pandas, NumPy, Matplotlib, Seaborn, Plotly
Development Tools: Docker, Git, Flask, React, MongoDB, PostgreSQL

PUBLICATIONS

Published

Roha, V. S., **Ranjan, R.**, & Yuce, M. R. (2025). *Evolving Blood Pressure Estimation: From Feature Analysis to Image-Based Deep Learning Models. Journal of Medical Systems, 49*(1), 97.

Under Review

Roha, V. S., **Ranjan, R.**, & Yuce, M. R. (2025). *Lightweight Smartphone-Based Blood Pressure Monitoring via Facial PPG Reconstruction and Temporal Pattern Encoding.* Submitted to *Information Fusion*.

Ranjan, R., Roha, V. S., & Yuce, M. R. (2025). *VITAL Net: A Hybrid Framework for SpO_2 and HR Estimation Using Smartphone rPPG Video.* Submitted to *IEEE Applied Sensing Conference*.

RESEARCH EXPERIENCE

Master's Thesis 2021 – 2022
Department of Physics, BITS Pilani

- Conducted Monte Carlo simulations on 2D/3D Ising models to analyze phase transitions and critical exponents.
- Optimized simulation runtime by 40% through vectorization and multiprocessing techniques.

Research Intern Jan – May 2022
Centre for Railway Information Systems (CRIS), New Delhi

- Designed and implemented predictive maintenance algorithms, successfully reducing equipment downtime by 18%.
- Developed an ML-based anomaly detection system for critical railway infrastructure.

INDUSTRY EXPERIENCE

Information Technology Officer Jun 2022 – Feb 2023
Aglow Engineers, Kolkata

- Engineered and automated data pipelines to migrate manual entry systems into robust SQL databases.
- Built machine learning forecasting models for proactive vulnerability detection and system maintenance.

Software Development Intern Jul – Dec 2021
Xilinx (now AMD), Hyderabad

- Developed the *Data Flow Sync Checker*, a key timing analysis tool used by over 25 engineers for FPGA design.
- Automated verification algorithms, resulting in a 30% improvement in design validation efficiency.

SELECTED PROJECTS

LLM-based Civic Engagement Platform 2024
Monash University

- Developed a full-stack email generation tool using the OpenRouter LLM API, incorporating safety filters and advanced prompt engineering.
- Deployed the application with a Flask backend and a React frontend.

HONORS & AWARDS

The Duke of Edinburgh's International Award – Silver 2015