MD. ROBIUL ISLAM ROMAN

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RESEARCH INTERESTS

Digital VLSI design and RTL-to-GDS implementation; processor and computer architecture (RISC-V); functional verification and physical design automation; embedded systems (FPGA, STM32, Raspberry Pi); and applied machine learning for biomedical signal processing and healthcare analytics.

EDUCATION

Master of Science(Msc.), Electrical and Electronic Engineering *Apr 2025 – Present*
BRAC University, Dhaka, Bangladesh

Bachelor of Science (BSc), Electrical and Electronic Engineering *Graduated Feb 2026*
American International University–Bangladesh (AIUB) • CGPA: 3.74 / 4.00

Higher Secondary Certificate (HSC), Science *Jan 2021*
Kurmitola High School and College, Dhaka, Bangladesh

PUBLICATIONS

Journal Articles

1. Kar, T. S., Sarker Shuvo, J., & **Roman, M. R. I.** (2025). Predicting Diabetes in Bangladesh Using Machine Learning: A Data-Driven Approach. *International Journal of Modern Engineering and Management (IJMEM)*, 2(4), Maharashtra, India.

Conference Papers & Proceedings

1. **Roman, M. R. I.** et al. Development of a PPG-Based Low-Cost Cuffless Continuous Blood Pressure Monitoring with Vital Sign Detection System. *IEEE BECITHCON*, November 2025.
2. Abir, M. A., Kabir, K. M. T., **Roman, M. R. I.**, & Ahmmed, M. M. (2025). Temporal and Spatial Dynamics in Medical Imaging Utilization in Bangladesh: A Statistical Analysis. Conference paper, February 2025.
3. **Roman, M. R. I.**, & Kabir, K. M. T. (2024). Statistical Analysis of Greenhouse Gas Impacts on Bangladesh's Climate. Conference paper, May 2024.

Conference Presentations & Posters

1. **Roman, M. R. I.** et al. Portable Health Insights: Designing a BIA-Enabled Smartwatch for Clinical and Personal Use. *RURS 1st International Student Conference and Research Fair*, University of Rajshahi, Feb 22–23, 2025.
2. **Roman, M. R. I.**, Abir, M. A., & Ahmmed, M. M. (2025). The Impact of El Niño and La Niña Weather Patterns and the Consequences of Climate Change in Bangladesh. Poster, January 2025.

Full publication list and metrics available on Google Scholar and ResearchGate.

RESEARCH & DEVELOPMENT PROJECTS

RTL Design, Synthesis & Place-and-Route of a Pipelined RISC Processor
github.com/Roman-rir/risc-v3-processor

- Developed a pipelined RISC processor in SystemVerilog and implemented the full RTL-to-GDS-oriented flow — functional verification, synthesis, static timing analysis, and place-and-route — using Cadence Innovus and Genus.

Cuffless Blood Pressure Estimation Using ECG & PPG Signal Fusion (Capstone) *2025*
github.com/Roman-rir/BPT_Base_Bp_Estimation

- Led a multidisciplinary team designing a wearable, non-invasive continuous blood pressure monitoring device, coordinating hardware design, embedded firmware, sensor integration, and validation testing.
- Awarded Best Capstone Project (Faculty of Engineering, AIUB) and presented at Broadband Expo 2026 (ISPAB) and an international symposium hosted by the Magna Charta Observatory.

Physical Layout Design in Cadence Virtuoso

- Designed transistor-level layouts and performed DRC/LVS verification to ensure physical-layout compliance and schematic consistency.

GNN–BERT Fusion Model for Musical Context Understanding *Coursework project*

github.com/Roman-rir/Neural_project

- Designed a graph neural network and BERT fusion architecture for modeling musical tags, structure, emotion, and retrieval, including a MATLAB pipeline for time- and frequency-domain audio feature extraction.

Raspberry Pi-Based Person-Tracking Robot

github.com/Roman-rir/human_follower_robot

- Built an embedded robotics platform with real-time face/person detection and autonomous following using computer vision.

PROFESSIONAL & INDUSTRIAL EXPERIENCE

AI Automation Engineer — Softvence Agency Alpha, Dhaka *Jul 2026 – Present*

- Design and maintain AI automation workflows (n8n, GoHighLevel) and AI-powered chatbots integrating LLM APIs, REST APIs, and webhooks.

Industrial Attachment Trainee — Energypac Power Generation PLC, Dhaka *Nov 2025 – Dec 2025*

- Hands-on training on diesel generators and Automatic Transfer Switch (ATS) systems in large-scale industrial power environments.

HONORS, AWARDS & SCHOLARSHIPS

- Best Capstone Project Award, Faculty of Engineering, AIUB (October 2025)
- Runner-Up, Poster Competition — ROBOLUTION 2025 (November 2025)
- Dean's List Honors, Faculty of Engineering, AIUB — Fall 2022, Spring 2022–23, Summer 2024–25
- Academic Scholarship, Faculty of Engineering, AIUB — Spring 2022–23 to Spring 2024–25

CERTIFICATIONS & PROFESSIONAL TRAINING

- RTL Design, Verification, Synthesis & PnR for Digital VLSI Design — AIUB Institute of Continuing Education (ICE)
- Chip-Based VLSI Design for Industrial Applications — Coursera & L&T EduTech (October 2025)
- Data Analysis with Python — IIT, Jahangirnagar University, under the EDGE Project, Bangladesh Computer Council, ICT Division (Nov 2024 – Jan 2025)

TECHNICAL SKILLS

- HDL & Programming: SystemVerilog, MATLAB, C/C++, Python, TCL, JavaScript
- VLSI / EDA Tools: Cadence Xcelium, Genus, Innovus, Virtuoso, RTL Design, Functional Verification
- Hardware & Embedded: Raspberry Pi, FPGA, STM32, Embedded Systems
- Design Tools: NI Multisim, CST Microwave Studio, Proteus, CAD, SolidWorks
- Machine Learning / AI: CNN, LSTM, RNN, SVM, Decision Trees, KNN, Logistic Regression, AI Agents, n8n
- Systems: Git/GitHub, CLI, Windows, Linux

REFERENCES

Dr. Shahriyar Masud Rizvi

Associate Professor, Department of EEE, AIUB | Deputy Director, Center for VLSI and Embedded Systems (CVES) | shahriyar@aiub.edu

Dr. Md. Hasan Imam

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