Md Sahabul Hossain

Research Assistant, Department of Electrical and Computer Engineering,
The University of New Mexico, Albuquerque, New Mexico, USA

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Education

Ph.D. in Computer Engineering 2021 - Present
University of New Mexico
Advisor: Dr. Eirini Eleni Tsiropoulou

Bachelor of Science in Electrical and Electronic Engineering November 2015
Islamic University of Technology (IUT), Gazipur, Bangladesh
CGPA: 3.90/4.00
Relevant coursework:

- Linear Algebra and Ordinary Differential Equations
- Statistics
- Computer programming
- Data Structures and Algorithms
- Peripherals and Microprocessor Based Design
- Numerical Analysis

Research Interest

My research interest lies in the fields of artificial intelligence, machine learning and optimization. I have a special interest in the application of machine learning in wireless networks, IoT devices, positioning and navigation, and embedded systems.

Teaching experience

Lecturer October 2016 – July 2021
Department of Electrical and Electronic Engineering,
Bangladesh University of Business and Technology (BUBT), Dhaka,
Bangladesh
Courses taught:

- Structured Programming Language (Theory and Lab)
- Numerical Analysis for Engineers (Theory)
- Microprocessor and Interfacing (Theory and Lab)
- Introduction to MATLAB (Lab)
- Mobile Cellular Communication (Theory)
- Digital Signal Processing (Theory and Lab)

Responsibilities: Prepared and conducted nine one-hour theoretical lectures (40 – 60 students) and three three-hour laboratory sessions (30 – 40 students) per week.

Honors and Awards

- OIC granted scholarship for 4 years of undergraduate study. 2011 - 2015
- Government Scholarship in Higher Secondary School Certificate (HSC) examination from Education Board 2011 - 2015
- Government Scholarship in Secondary School Certificate (SSC) examination from Education Board 2010 - 2011

Technical Skills

- Programming languages: Python, MATLAB and Simulink, C/C++, JavaScript, PHP, SQL.
- Python packages: scikit-learn, scikit-image, keras, tensorflow, stable baseline.
- Embedded systems: AVR and PIC micro-controllers, Raspberry Pi, Arduino.
- Computer aided design/engineering: AutoCAD, Proteus, PSpice, MicroWind.

Projects

- Investigation of effect of resource allocation scheme and user mobility on the system throughput in a 5G mobile cellular network.
- Class routine optimization using genetic algorithm under various levels of constraints.
- Histogram and contour selection-based segmentation algorithm for X-Ray images.
- Analyzing impact of image preprocessing on pediatric bone age assessment from X-Ray using deep learning techniques.
- Forecasting of hourly electrical load for the Power Grid Company of Bangladesh.

University Service

Intake In-charge 2018 - 2021
Bangladesh University of Business and Technology (BUBT)
Responsibilities: Helped three intakes of students with course registrations and acted as their academic advisor.

Member of Question Moderation Committee 2019 - 2020
Bangladesh University of Business and Technology (BUBT)
Responsibilities: Moderated mid-term and final examination question papers of electronics major courses.

Member of Course distribution and Routine management Committee 2019 - 2021
Bangladesh University of Business and Technology (BUBT)
Responsibilities: Together with other members of the committee made academic routines for the department of Electrical and Electronic Engineering.

Undergraduate Projects

- Developing a simulator for nano-plasmonic structures using MATLAB GUIDE.
- CAM security system using IP camera with instant messaging in case of intrusion and live video streaming.

- Ultrasonic 2D mapping robot using ultrasonic sensor and Arduino.
- Designing a “Smart Traffic Control System” using Arduino, LDR and LASER, optimized for the roads of Bangladesh with low cost of installation.
- Designing an “Arithmetic Logic Unit (ALU) with seven segment display” using DSCH simulator and Proteus and implementation of the same using different digital logic IC’s.
- Bank vault security system using LASER, LDR, smoke sensor and vibration sensor with real time message alert and live video streaming.
- Designing a Smart campus with smart attendance system and instant messaging to parents about results, institution fees and students’ entering and leaving the campus.

Achievements

- Champion, 4th National Chemistry Olympiad (Divisional Stage) 2011
- Champion, Higher secondary category, 9th National Math Olympiad (Divisional Stage) 2011
- Champion, Secondary category, 7th National Math Olympiad (Divisional Stage) 2009
- Champion, Junior category, 5th National Math Olympiad (Divisional Stage) 2007

Publications

1. **Plasmonic corrugated waveguide coupled to a rectangular nano-resonator as an optical filter**
   Hasan, M., Mayoa, F., **Hossain, M. S.**, Ahmed, R., Hossain, M., Ali, K., & Islam, S. (2020). OSA Continuum, 3(12), 3314-3323. PDF

2. **Reconfigurable Intelligent Surfaces enabling Positioning, Navigation, and Timing Services**
   Sahabul, M. S., Irtija, N., & Tsiropoulou, E. E. (2022). Reconfigurable Intelligent Surfaces enabling Positioning, Navigation, and Timing Services. In ICC 2022-IEEE International Conference on Communications. IEEE. (Under Review).