

# MD SAHABUL HOSSAIN

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

(505) 610 7057

sahabulh@iut-dhaka.edu

sahabulh.github.io

## Education

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### 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

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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

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### Lecturer

October 2016 -

Department of Electrical and Electronic Engineering,

July 2021

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

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- 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

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- 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

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- 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

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**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 routine of department of Electrical and Electronic Engineering.

## Undergraduate Projects

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- 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

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| • 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 |

## Published journal papers

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