

## Research Interest

Biomedical Engineering, Medical Imaging, Machine Learning Algorithms and Neural Networks (AI Methods) in Bio-imaging, Magnetic Resonance Imaging, Clinical Diagnosis and Therapy, Medical Devices and Instrumentation, Healthcare Tracking, Computer Aided Diagnosis of Critical Diseases and Therapy, Biological and Biomedical Computational Methods, Devices and Systems, Sensor based Network

## Academic Background

Aug, 2015 **M. Sc., GPA 4.00** out of 4.00 (**1st position** among 70 students), Department of Electrical and Electronic Engineering, University of Dhaka, Bangladesh.

### **M. Sc. Thesis: Physiologically Based Pharmacokinetic Modeling of Cancer Tumor Growth and Designing of a Decision Support System for Chemotherapy Schedules**

- a whole body Docetaxel based PBPK model is implemented and analyzed
- then the PBPK model is combined with cancer chemotherapy model using a neural network to develop a physiologically based pharmacokinetic model of cancer tumor growth and investigated the response of cancer tumor growth model and effects on tumor cells
- a new decision support system based on fuzzy expert control is also proposed for deciding clinically relevant chemotherapy schedules by periodic adjustment of tumor conditions and number of immune cells

Nov, 2013 **B.Sc., CGPA 3.852** out of 4.00 (**2nd position** among 70 students), Department of Electrical and Electronic Engineering (former Applied Physics, Electronics and Communication Engineering), University of Dhaka, Bangladesh

## Professional Experiences

- **Assistant Professor** (August, 2019- present), Department of Electrical and Electronic Engineering, Faculty of Engineering & Technology, University of Dhaka, Dhaka-1000, Bangladesh
- **Lecturer** (April, 2016- August, 2019), Department of Electrical and Electronic Engineering, Faculty of Engineering & Technology, University of Dhaka, Dhaka-1000, Bangladesh
- **Lecturer** (January, 2015 – April, 2016), Department of Computer Science and Engineering, Dhaka International University, Dhaka, Bangladesh
- **Student Adviser** (February, 2018 - present), Department of Electrical and Electronic Engineering, Faculty of Engineering & Technology, University of Dhaka, Dhaka-1000, Bangladesh
- **Core Team Member and Research Mentor**(January, 2017- present), Fab Lab DU.

## Awards and Achievements

1. Received the most Prestigious **Dean's award** in 2014 for outstanding result in B.Sc. awarded by the Faculty of Engineering & Technology, University of Dhaka, Dhaka, Bangladesh
2. Was in **top 1% in M.Sc.** and **top 2% in B.Sc.** Examinations
3. **Bangladesh Government Scholarship** for achieving outstanding results in Class Eight (2003)

## Ongoing Research Projects

Involved with the following projects of my undergraduate students:

1. Automatic Alzheimer's disease detection using MRI and machine learning
2. Multiple noise cancellation from ECG signal
3. Touch less Virtual Keyboard Controlled by Eye Blinking
4. Carbon Footprint Evaluation for the Department of Electrical and Electronic Engineering, University of Dhaka

## Completed Research Projects

1. Supervised my student's Master's Thesis titled "Patient Health Monitoring Using Wireless Body Area Networks"
2. Supervised my student's Bachelor Projects titled-
  - Study on Human Interaction Recognition using MHI
  - Mobile Application for Earthquake: A Systematic Review and Expert-Based Usability Evaluation Considering the Special Requirements for Earthquake scenario

## **Publications**

1. **Islam M. Z.**, M. S. Alam, "Implementation and Analysis of Physiologically Based Pharmacokinetic Model for Docetaxel in Cancer Chemotherapy", Dhaka University Journal of Applied Science and Engineering, January 2019
2. **Islam M. Z.**, S H Rafi, M M Miah, "Remote Health Monitoring System using Wireless Body Area Network", Global Journal of Researches in Engineering, GJRE, Vol. 18, Issue 6, December 2018.
3. Syed Mahir Tazwar, Zishan Zahidul Islam, **Islam M. Z.**, Md. Atiqur Rahman Ahad, "A Study on Sensor-based Human Activity Analysis", IUB Journal of Engineering and Computer Science, Vol. 2, Number 1-2, December 2017
5. Talha K M Nahiyah, **Islam M. Z.** and Md. Adnan Kiber, "An Algorithm for Video Polysomnography Method to Create Shortened Motion Video from Whole Night Sleep Video" International Journal of Computer Applications, Vol. 80, No. 5, pp. 43-45, October 2013

## **Manuscripts under Review**

1. Nadia Alam, **Islam M. Z.**, M.S. Alam, "Design of Cancer Chemotherapy Schedules using Fuzzy Expert Control and Multi-Objective Evolutionary Algorithm"  
[Manuscript submitted to the "IEEE Transactions of Biomedical and Health Informatics "]

## **Conference Presentations**

1. Z. Z. Islam, S. M. Tazwar, **Islam M. Z.**, S. Serikawa, and M. A. R. Ahad, "Automatic fall Detection System of Unsupervised Elderly People using Smartphone", 5th IIAE International Conference on Intelligent Systems and Image Processing, Hawaii, USA, 2017.
2. **Islam M. Z.**, Talha K M Nahiyah and Md. Adnan Kiber, "A Motion Detection Algorithm for Videopolysomnography to Diagnose Sleep Disorder" International Conference on Computer and Information Technology, pp. 272-275, Dhaka, Bangladesh, December 2015.
3. **Islam M. Z.**, M S Hussain, "Effect on Performance Characteristics of Patch Antenna for the Variation of Design Parameters", IEEE SBDU Student Conference on Science & Engineering 2015, Dhaka, Bangladesh, October 2015
4. **Islam, M.Z.**; Walid-Bin-Habib; Hassan, M.S., "Environmental & health effects of nuclear radiation and various aspects of nuclear power plant in Bangladesh", 2014 IEEE 2nd International Conference on Green Energy and Technology (ICGET), pp.69-74, Dhaka, Bangladesh, September 2014.
5. **Islam, M.Z.**; Shameem, R.; Mashsharat, A.; Mim, M.S.; Rafy, M.F.; Pervej, M.S.; Rahman Ahad, M.A., "A study of Solar Home System in Bangladesh: Current status, future prospect and constraints", 2014 IEEE 2nd International Conference on Green Energy and Technology (ICGET), pp.110-115, Dhaka, Bangladesh, September 2014.

## **Membership**

• IEEE (Jan 2014 to Present) • IEEE ComSoc. (Jan 2014 to present) • IEEE CS (Feb 2018 to present) • The Optical Society of America (Oct 2012 to present) • IEEE RAS (Feb 2018 to present) • IEEE YP (Feb 2015 to present) • IEEE SIGHT (Feb 2018 to present) • IEEE PES (Feb 2017 to present) • IEEE WIE (Feb 2016 to present) • IEEE EMBS (Feb 2018 to present) • Bangladesh Medical Physics Society (Feb 2018 to present) • Bangladesh Medical Physics Association (Jan 2014 to present) • Dhaka University Photographic Society (2009 to 2011)

## **Activities & Affiliation**

• Mentor, IEEE Student Branch University of Dhaka (Jan 2017 – Jan 2019) • Counselor, IEEE Student Branch University of Dhaka (Jan 2017 – Jan 2019) • Chairperson, IEEE Student Branch University of Dhaka (Feb 2015 to Mar 2016) • Secretary, IEEE SBDU Student Conference on Science and Engineering 2015 • Treasurer, University of Dhaka OSA Student Chapter (2012 to 2016) • Joint Secretary, APECE-EEE Alumni Association, University of Dhaka ( Jan 2018 - present) • General Secretary, Electronics and Communication Club, Dept. of EEE, DU (Nov 2012 to Aug 2014) • Organizing Team Member, IEEE International Conference on Informatics, Electronics & Vision (2013 and 2014) • Organizing Team Member, IEEE International Conference on Green Energy and Technology (2014 and 2015) • Core Team Member, Bangladesh Electronics Olympiad (2015 and 2016)

## **Relevant Coursework**

Analog Electronics; Digital Electronics; Electrical Circuit Analysis; Electrical Machines and Measurements; Power Electronics; Control Engineering; Digital Signal Processing; Computer Programming, Microprocessor and Interfacing; Electromagnetic Theory and Antenna; Biomedical Signal Analysis and Imaging; Radiation and Medical Physics; Applied Acoustics; Artificial Neural Networks; Scientific, Industrial and Biomedical Instrumentations; Intelligent System Engineering; Applied Optics, Physical Electronics & Devices, Material Science, Optical Fiber Communication, Linear Algebra; Ordinary Differential Equations; Calculus; Numerical Analysis; Mathematical Methods etc.

## **Skills**

MATLAB, P Spice, Programming in C, AUTO CAD, R, Assembly, LaTeX, MS Office and Python