



Ashraful Islam

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EDUCATION

B.Sc. **May 2012 — Feb 2017(expected)**

Bangladesh University of Engineering & Technology
Department of Electrical & Electronic Engineering

CGPA : 3.92 / 4.00
Position in department: 9 / 200 (till 7th semester)

HSC **2009 — 2011**

Notre Dame College
GPA: 5.00 / 5.00

SSC **2006 — 2009**

Motijheel Model High School
GPA: 5.00 / 5.00

INTERESTS

- Machine Learning
- Signal Processing
- Image Processing

SKILLS

- **Programming Languages:** Python, MATLAB, C, C++, Java, C#, Assembly, Verilog, Javascript, Ruby, Erlang, HTML5, CSS3, Bash, Objective-C
- **Frameworks & Software:** Jupyter, scikit-learn, Pandas, Django, TensorFlow, Bootstrap, Jekyll, jQuery, Rails, SQLite, MongoDB, Git, Cadence, Proteus, PSpice, Arduino, Eclipse, Android Studio
- **Operating System:** MacOS, Linux, Windows

AWARDS

- **1st prize** in IEEE Signal Processing Cup 2016 held in Shanghai, China
- **Dean's List Awards** in all levels
- **University Merit Scholarship** (3 times for GPA 4.00/4.00)
- **Board Scholarship** (All through undergraduate program 2012-2016)
- **Rank-1**, BUET Undergraduate Admission Test, 2011
- **Rank-3**, University of Dhaka Admission Test 2011 out of 80,000+ students
- **Champion** in Regional Mathematics Olympiad, 2009 and 2011
- **Champion** in College Science Fair Physics Olympiad, 2009 and 2011

PROJECTS

- **Medical Assistive Robot With Voice Recognition:** This project was a combination of signal processing, control system and electronics. We designed the hardware with arduino and built a real time voice recognition system.
- **8 bit PC with Assembly Language:** This PC could perform sixteen basic commands.
- **LED Cube:** This was the project done by our group in Digital Logic Design Laboratory. It was an 8x8 LED cube that could show different 3D shapes. The entire hardware was designed with simple logic gates.
- **Synchronous Machine Project:** We designed a synchronous machine with half horsepower capacity.
- **Arithmetic Logic Unit:** It could perform 12 operations. Schematics and Layout were designed in Cadence.
- **Grapher:** This was a MATLAB app that can draw 2D and 3D graph and perform different mathematical operations with visualization.
- **Modified Simple As Possible Computer:** We had to design a 8 bit modified computer in Proteus software.

RESEARCH EXPERIENCE

Machine Learning

Aug 2015 — June 2016

Supervisor : Dr. Mohammad Ariful Haque, BUET

The task of this research was to explore power signatures in audio recording. Our group's efforts finally resulted in the development of a system that could classify media recordings according to the grid-of-origin with significant accuracy. In recognition of our effort, our team was awarded first prize in IEEE Signal Processing Cup Competition 2016 held in Shanghai, China. We have also submitted a journal paper to TPAMI based on our novel classification method on location forensics.

- implemented neural network using python for classification of power signatures.
- learned to use various frameworks like numpy, scipy, scikit-learn, LibSVM.
- implemented SVM classification using scikit-learn with RBF kernel and then using LibSVM.
- built the entire software framework in MATLAB with responsive user interface.
- developed a novel pole-matching algorithm, incorporated KNN algorithm in pole-matching.

Biomedical Signal Processing

Feb 2016 — Jan 2017

Supervisor : Dr. Md. Kamrul Hasan, BUET

The main challenge in this research was to extract heart rate from PPG signal obtained during intense physical movement. I also built an Android app based on my algorithm that can measure heart rate from PPG data collected from HRM sensor found on modern smartphone.

- calculated gradient of a constraint function in RLS cost function to exploit the frequency sparsity information in PPG data.
- investigated different parametric spectral estimation techniques.
- tested wavelet transform and ensemble empirical mode decomposition.
- developed an android app, optimized different built-in MATLAB functions for android platform.

RELEVANT COURSES

Digital Signal Processing I, Digital Signal Processing II, Random Signals and Processes, Continuous Signals and Linear Systems, Computer Programming, Linear Algebra, Probability & Statistics, Calculus I & II, Ordinary and Partial Differential Equation

PROFESSIONAL AFFILIATION

- Student member, IEEE
- Student member, IEEE Signal Processing Society

JOURNAL PAPER SUBMITTED

S. Chowdhury, J. Dey, R. Hayder, A. Islam, and M. A. Haque, *Location Forensics From Media Recordings Using A Novel Pole-matching Classifier* submitted to IEEE Transactions on Information Forensics and Security.

TEACHING EXPERIENCE

Part time tutoring experience on college mathematics at a private academic care from 2012 - 2016

REFERENCES

Dr. Md. Kamrul Hasan
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