

Bashirul Azam Biswas

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Graduate Assistant

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Department of Electrical, Computer, and Systems Engineering
Rensselaer Polytechnic Institute

Educational Qualifications

Name of Degree	Institution	Passing Year	GPA/CGPA
S.S.C	Monipur High School, Dhaka	2006	5.00
H.S.C	Dhaka Residential Model College	2008	5.00
B. Sc. in EEE Major- Communication	Bangladesh University of Engineering & Technology (BUET)	2014	3.76
Ph.D. in ECSE (Ongoing)	Rensselaer Polytechnic Institute (RPI)	2024	3.70

Project works in Undergraduate Courses

- Design of 4x4 Sudoku, dot matrix display and 8-bit PC in Proteus
- Power flow analysis of a 9 bus system in PSAF.
- Implementation of watermarking in images and pitch detection in speech signals
- Design of a transmitter and receiver operating in high frequency region
- Implementation of Viterbi algorithm

Project works in Graduate Courses

Advanced Digital Signal Processing (April, 2017 at BUET)

- Estimating random channel impulse response using LMS, VSS-LMS, NLMS and RLS algorithms
- ECG and EOG canceller using VSS-LMS and an acoustic Echo canceller using RLS
- Recovery of reverberated signal using adaptive beam former and LP residual signal
- Implementation of Piseranko, MUSIC, minimum variance, Welch and AR modelling

Digital Speech Processing (Oct, 2017 at BUET)

- Music and speech classification using GMM

Information and Coding Theory (April, 2017 at BUET)

- Protein similarity analysis using Kolmogorov complexity

Digital Image Processing (April, 2018 at BUET)

- Non-cooperative iris segmentation by convolutional encoder decoder network

Genomic Signal Processing (April, 2018 at BUET)

- Protein similarity analysis by wavelet decomposition of cellular automata images

Computer Vision (Fall 2019 at RPI)

- Linear and non-linear estimation of camera projection matrix
- Stereo calibration and 3D reconstruction from stereo images
- Kalman and Particle filtering for object tracking and factorization method for 3D structure deduction

Pattern Recognition (Fall 2019 at RPI)

- Protein function prediction from protein sequences

Introduction to Deep Learning (Spring 2020 at RPI)

- Image classification using multi-class logistic regression, Neural network and CNN
- Human pose estimation with spatial-temporal RNN
- Action Recognition with spatial-temporal RNN

Computational Optimization (Spring 2020 at RPI)

- Robust PCA using ADMM and ALM solver

Visual Scene Graph and its Applications (Spring 2020 at RPI)

- Evaluating existing models of scene graph generation

Introduction to Probabilistic Graphical Model (Fall 2020 at RPI)

- Implementation of Belief Propagation, Approximate Inference, Structural EM and MRF
- Learning and Inference under uncertain evidence

Software and Programming Skills

Python, MATLAB, Tensorflow, Pytorch, PSpice, PSAF, Proteus, MicroC, AVR, Turbo C (C), Visual Basic(C++), Eclipse(Java), AutoCAD, Julia

Conference Papers

- **BA Biswas**, SSI Khan, SMM Rahman, “Discriminative masking for non-cooperative IrisCode recognition,” in *Proceedings 8th International Conference on Electrical and Computer Engineering*, pp. 124-127, Dhaka, Bangladesh, Dec. 2014.
- MM Rahman, **BA Biswas**, MIH Bhuiyan, “Protein Similarity Analysis by Wavelet Decomposition of Cellular Automata Images,” in *2019 International Conference on Electrical, Computer and Communication Engineering (ECCE)*, Cox's Bazar, Bangladesh, Feb. 2019

Career History**Physical Chip Design Engineer at PrimeSilicon**

- Duration: From September, 2014 to June, 2016.
- Tapeout projects - 28nm tech node 22x17.3 mm² chip (140M GC) & 11x11 mm² chip (57M GC)
- Software Learned – Cadence, Verilog, AtopTech Aprisa, Calibre Physical Verification, Quantus QRC Extraction, Conformal LEC, Tempus Timing Signoff Solution, Unix Environment
- Programming Languages -- Perl, TCL/Tk

Lecturer at Dept. of EEE, University of Liberal Arts Bangladesh (ULAB)

- Duration: From September, 2017 to May, 2019.
- Courses Taught – Electrical Circuits I, Physics, Electric Machines I, Analog & Digital Communication, Control System Engineering, Microwave Engineering, Wireless Communication

Teaching Assistant at Dept. of ECSE, Rensselaer Polytechnic Institute

- Duration: Fall 2019 & Spring 2020
- Courses Taught – Embedded Control, Computer Components and Operations

Research Assistant at Dept. of ECSE, Rensselaer Polytechnic Institute

- Duration: From Summer 2020 to Spring 2021
- Research Project in collaboration with IBM – Developing new algorithms for scene graph generation