Abdul Mukit

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Education

PhD | Electrical and Computer Engineering
University of Oklahoma (OU) | 2018-Present

- Research: Augmented Surgical Reality, Computer Vision, Deep Learning
- Honor: Graduate Fellowship
- GPA: 4
- Advisor: Dr. Samuel Cheng

BS | Electrical and Electronic Engineering
United International University (UIU), Bangladesh | 2014

- Concentration in wireless communications
- Honors: Graduated Magna Cum Laude, Top 2 % class standing, Full tuition & fees waiver scholarships
- GPA: 3.93

Graduate Coursework

Machine Learning for Engineers
Advanced Artificial Neural Networks
Artificial Neural Networks & Applications
Numerical Analysis

Skills

Languages
Experienced
• Python (2 years) • Matlab (5 years)
Proficient
• R • C++ • C

Machine Learning
Frameworks
• PyTorch • Tensorflow • Pandas
• Scikit-Learn • Keras
Algorithms
• CNN • GAN • LSTM • RNN

Game Engine and 3D Software
• Unreal Engine 4 • Blender

General
OS
• Linux • Windows
Web
• HTML• CSS• jQuery• javaScript• PHP• CodeIgniter• MySql

Experience

Image and Information Processing Lab, OU
Graduate Research Assistant
Aug 2018 - Present

- Conducting research on Augmented Surgical Reality.
- Applying PyTorch and Tensorflow for 6 DoF pose estimation of surgical tools.
- Experimenting with the usability of depth-sensing cameras in operation room lighting. Cameras include Intel D435i, Stereolabs Zed, Microsoft Kinect-2 and MYNTEYE S1030.
- Porting Python projects into C++ applications for Microsoft Hololens.
- Creating 3D object models and salvaging 3D scanned models using Blender.
- Generating synthetic training-data using Unreal Engine 4 for deep-learning.

Biomedical, Image and Signals Research Group, UIU
Research Assistant (Full-time)
Nov 2016 - July 2018 (1 year 9 months)

- Conducted research on development of a low-cost technology for screening microvascular complications in diabetic population in Bangladesh.
- Extensive usage of Matlab for data preprocessing, signal processing, machine learning and app development for live-capturing and cleaning medical signals.
- Data acquisition and management: ECG and PPG, Cardiovascular Reflex Test, Fundus Photography, Nerve Conduction Velocity, and Blood Tests.
- Project management: Equipment procurement & modification, protocol development, collaboration with physicians, budget distribution, ethical approval acquisition, management of other RAs and thesis students.
- Side Project: Detection of fECG R-R peak locations using machine learning.

National University of Malaysia
Graduate Research Assistant
October 2015 - June 2016 (9 months)

- Conducted research on the forward error correction block of ZigBee based baseband processor.

United International University, Bangladesh
Research Assistant (Full-time)
February 2015 - June 2015 (5 months)
Wireless Power Transfer, a Joint Research Collaboration with University of Saskatchewan, Canada.

- Developed Matlab based program for optimum wireless power transfer and tested validity in hardware.

Teaching Assistant
October 2014 - January 2015 (4 months)

- Digital Signal Processing and Electrical Circuits 1

Research Assistant (Full-time)
April 2014 - September 2014 (6 months)
Computer Vision-Based Wireless Capsule Endoscopy (WCE) Tracking, a joint Research Collaboration with University of Saskatchewan, Canada.

- Developed a computer vision system and a 3D virtual intestine in Matlab for localizing WCE PillCam inside human intestine.

Professional Training

Wise Training Program on Electrical Testing & Wafer Level Reliability
MIMOS Berhad, Kuala Lampur, Malaysia | October, 2015

Professional Web Application Development Training
OployeeLabs, Dhaka, Bangladesh | March-June, 2013

Awards

- Graduated Magna Cum Laude in Undergraduate, 2015.
- 2nd Place, National Innovative Project Competition, Bangladesh, 2012.
- 2nd Place, KUET Inter-University Debate Tournament, Bangladesh, 2011.

Papers

Published/Accepted

- Huque, A. S. A., K. I. Ahmed, M. A. Mukit, and R. Mostafa. "HMM-based Supervised Machine Learning Framework for the Detection of fECG RR Peak Locations." *IRBM* 40, no. 3 (2019): 157-166.
- Wahid, Khan, SM Lutful Kabir, Haider A. Khan, Abduallh Al Helal, M. A. Mukit, and Raqibul Mostafa. "A localization algorithm for capsule endoscopy based on feature point tracking." *In 2016 International Conference on Medical Engineering, Health Informatics and Technology (MediTec)*, pp. 1-5. IEEE, 2016.
- Bhuiyan, Mohammad Arif Sobhan, Mamun Bin Ibne Reaz, Md Torikul Islam Badal, Md Abdul Mukit, and Noorfazila Kamal. "Design of an active inductor-based T/R switch in 0.13 m CMOS technology for 2.4 GHz RF transceivers." *Trans. Electr. Electron. Mater* 17 (2016): 261-269.
- Rahman, GMA Ehsanur, Md Abdul Mukit, Raqibul Mostafa, K. I. U. Ahmed, and Murtaza Ali. "Development and demonstration of a prototype e-ECG system for telemedicine application." *In The 8th International Conference on Software, Knowledge, Information Management and Applications (SKIMA 2014)*, pp. 1-6. IEEE, 2014.

Projects

- Pose Detection of Medical Tool in Surgical Lighting. </>
- Robust Hand Tracking in Surgical Lighting. </>
- Detection of Diabetic Peripheral Neuropathy using Matlab, Pandas, Scikit-Learn and PyTorch. </>
- Development and Demonstration of ECG Telemedicine System.
- Programmable Mobile Robot Learning Kit System.

Funding Awards

Wethington Graduate Fellowship for Academic Excellence
University of Oklahoma, 2018-2023
This 5-year fellowship is used to recruit outstanding graduate students. $25,000 stipend supplement is awarded over a 5 year period along with assistantship.

Undergraduate Performance Scholarship
United International University, 2010-2014
The top 20% students among all departments are awarded full tuition and fees waiver each semester. I was awarded the scholarship 10 out of 12 semesters of study.