Provakar Mondol

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RESEARCH INTEREST

- Deep Learning
- Image Processing
- Video Processing
- Medical Imaging
- Health Analytics
- Neuroscience

EDUCATION

- **Khulna University of Engineering and Technology (KUET)** Khulna, Bangladesh
  M.Sc. *in Electrical and Electronic Engineering; CGPA: 3.83/4.00* July 2021 – Ongoing
  Thesis: *Optimized Deep Learning Models for Gastro-intestinal Image Classification and Automated Polyp Detection*
- **Khulna University of Engineering and Technology (KUET)** Khulna, Bangladesh
  B.Sc. *in Electrical and Electronic Engineering; CGPA: 3.52/4.00* March 2013 – May 2017
  Thesis: *Design of A New Dry Electrode and Comparison of Performance with Biopac Wet Electrode*

PROFESSIONAL EXPERIENCES

- **Bangladesh India Friendship Power Company Limited** Bagerhat, Bangladesh
  Deputy Manager, Department of Control & Instrumentation December 2020 – Present
  Responsibilities:
  - Implementation and modification of logics for protection of equipment.
  - Open-loop, closed-loop and coordinated master control loop tuning and healthiness checking.
  - Implementation and modification of Graphical User Interface of the system.
  - Interlocks checking, field instrument calibration and troubleshooting.
  - Project implementation on Effective Online Document Management System (DMS).
  - Maintenance and commissioning of network system of power plant.
  - Preparing contracts and procurement of the spares and manpower.
- **Daffodil International University (DIU)** Dhaka, Bangladesh
  Lecturer, Department of EEE October 2017 – November 2020
  Responsibilities:
  - Teaching undergraduate students on Control Systems, Electrical Machine, Electronic Devices and Circuit Theory, Analog Electronics, Digital Electronics, Random Signals and Processes, Power System Protection, Microprocessors and Interfacing.
  - Teaching practical lab work on Electrical Circuits, Electronics, Electrical Machine, Power System Protection, Control System Simulation.
  - Preparing Course Offering and Class Routine as the Course Coordinator of EEE department.
  - Mentoring students for undergraduate thesis.
- **Prime University (DIU)** Dhaka, Bangladesh
  Lecturer, Department of EEE August 2017 – September 2017
  Responsibilities:
  - Teaching undergraduate students on Control Systems, Electrical Machine, Electronic Devices and Circuit Theory.

TECHNICAL & PERSONAL SKILLS

- **Programming Languages**: Python, C, C++, MATLAB
- **Frameworks**: Keras, TensorFlow
- **Hardware & Circuit Design**: Arduino, Atmel AVR, Proteus
- **Graphics Programming and Industrial Applications:** Siemens SPPA T3000, MaxDNA, Valmet VMS, Honeywell PLC, Schneider PLC, Emerson PLC, ABB PLC

RESEARCH EXPERIENCE

- **Gastrointestinal Image Classification and Automated Polyp Detection (2023-Present)**
  - We classified the multiclass GI image data using customized CNN to aid the endoscopic and colonoscopic inspection.
  - Performed panoptic segmentation on Polyp image data using customized U-Net and Watershed algorithm to better understand the polyp condition in colon.
  - Working on development of a real-time polyp detection system from colonoscopic videos to provide an automated and time-saving solution to the problem.
- **Framework for Diagnosis of Alzheimer's Disease in Data-Constrained Scenarios (2023-Present)**
  - Compared performances of augmentation and SMOTE on unbalanced MRI image data for classification of stages of Alzheimer's Disease using a customized deep learning model.
  - Applied transfer learning using three state-of-the-art models to evaluate their performance on classification.
  - Working on generating synthetic image data using WGAN-GP to further solve data unbalance constraints.
- **Development of A Dry Electrode for Bio Signal Acquisition (2016-2017)**
  - Designed and developed a new type of dry electrode which can extract bio signals like ECG, EEG and EMG.
  - Compared the performance of signal acquisition using developed dry electrode with those acquired using state-of-the-art Biopac wet electrodes.
- **Short Channel Effects Suppression in a Dual-Gate Gate-All-Around Si Nanowire Devices (2015-2016)**
  - Designed a Dual-Gate GAA Silicon nanowire nMOSFET and extracted its short channel parameters and compared the parameters with those of GAA.
  - Studied the process sensitivity and mobility degradation of the designed nMOSFET.

PUBLICATIONS

- **P. Mondol**, P. Das, and K. K. Halder, "U-Net and Watershed Based Deep Learning Approach for Panoptic Segmentation of Colorectal Polyps in Colonoscopy," IEEE International Conference on Electrical, Computer and Communication Engineering (ECCE), Chittagong, Bangladesh, 2025.
- **P. Mondol**, P. Das, and K. K. Halder, "GINet: A Deep Learning Approach to Gastrointestinal Image Classification," IEEE International Conference on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN), Rangpur, Bangladesh, 2025.
- P. Das, M. Islam, and **P. Mondol**, "Utilizing a Multi-Class CNN Model for Precise Diagnosis of Alzheimer's Disease," IEEE Global Conference on Cognitive Computing and Communication Technology (GC4T), Pune, India, 2025.

- P. Das, M. Islam, and **P. Mondol**, "A Comparative Analysis of Pre-trained Models for Identifying Alzheimer's Disease," IEEE International Conference on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN), Rangpur, Bangladesh, 2025.
- M. W. Rony, **P. Mondol**, and H. R. Myler, "Sensitivity of a 10nm dual-gate GAA Si Nanowire nMOSFET to Process Variation," 19th International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, 2016.
- M. W. Rony, P. Bhowmik, H. R. Myler, and **P. Mondol**, "Short Channel Effects Suppression in a Dual-gate Gate-All-Around Si Nanowire Junctionless nMOSFET," 9th International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh, 2016.

HONORS AND AWARDS (SELECTED)

- **Dean's Award** in fourth year in KUET for outstanding academic results
- **Board Scholarship (Merit-13)** in Rajshahi Board for outstanding academic results in Higher Secondary School Certificate Exam-2012
- **Board Scholarship (Merit-41)** in Rajshahi Board for outstanding academic results in Secondary School Certificate Exam-2012

VOLUNTEER EXPERIENCES (SELECTED)

- Volunteered in a Line-Follower robot competition as a mentor. My overall role was to maintain the rules of the competition and give marks on competitors' robot performance. (December 2016)
- Worked as a technical core and event promotional member in the Inter-University Tech Fiesta (IUTF), Khulna University of Engineering & Technology (KUET), a nationwide science and technology competition and research platform. (January 2016)
- Volunteered in the International Conference on Electrical Information and Communication Technology (EICT), Khulna, Bangladesh as a technical operator. (December 2015)

LANGUAGE PROFICIENCY

- **Bengali** (Bangladesh, Native)
- **English** (Fluent)
- **Hindi** (Fluent)

REFERENCES

- **Dr. Kalyan Kumar Halder**
  Professor, Department of EEE
  Khulna University of Engineering and Technology (KUET), Khulna, Bangladesh
  Email: kalyan@eee.kuet.ac.bd
  [Google Scholar]

- **Dr. Kalyan Kumar Halder**
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