



RESEARCH PROFILE

Assistant Professor in Biomedical Engineering with research experience in biomedical signal processing, biomedical instrumentation, biomedical device design, prototyping and fabrication, biosensors, medical imaging, bioinformatics, and artificial intelligence for healthcare. Research focuses on developing computational and engineering approaches for disease diagnosis, physiological signal analysis, biomarker discovery, and intelligent healthcare systems. Contributed to peer-reviewed research in ECG and arrhythmia analysis, medical image-based disease classification, biomarker discovery, and ML-assisted diagnosis, with experience leading multidisciplinary biomedical engineering laboratory research.

RESEARCH INTERESTS

*Biomedical Signal Processing (ECG, EEG, EMG), *Biomedical Device Design, Prototyping & Fabrication, *Biomedical Instrumentation & Diagnostic Systems, *Wearable Biosensors, Medical Imaging & Computer Vision, *Artificial Intelligence & Machine Learning in Healthcare, *Bioinformatics & Biomarker Discovery.

ACADEMIC BACKGROUND

- **M.Sc., Islamic University, Bangladesh** Kushtia 7003, Bangladesh
Applied Physics, Electronics and Communication Engineering; GPA: 3.82/4.00 Period: 2012–2013 Degree awarded: 2016
M.Sc. Thesis: *Evaluation of Subsurface Formations for Groundwater Potential in the Hatots Hariapur Union, Kushtia Sadar Upazila, Bangladesh Using Geo-Electrical Resistivity Method*
- **B.Sc. (hon's), Islamic University, Bangladesh** Kushtia 7003, Bangladesh
Applied Physics, Electronics and Communication Engineering; GPA: 3.66/4.00 Period: 2007–2011 Degree awarded: 2014

RESEARCH EXPERIENCE

- **Biomedical Instrumentation and Diagnostic Laboratory** Islamic University, Kushtia-7003, Bangladesh
Principal Investigator [April, 2020–Present]
 - Led experimental research in biomedical instrumentation, biosignal acquisition and analysis, physiological monitoring, bio-amplifier and nerve-stimulator design, and diagnostic measurements using ECG, EEG, pulse oximetry, spectrophotometry, electrode–electrolyte impedance analysis, and MATLAB-based signal processing.
- **Basic Biomedical Engineering Laboratory** Islamic University, Kushtia-7003, Bangladesh
Laboratory Coordinator [January, 2019–Present]
 - Coordinated laboratory research and hands-on training in physiological measurement and biomedical fundamentals, including blood pressure, BMI, P_{O_2} , P_{CO_2} , pH, glucose monitoring; goniometric assessment of human body movements, and Cu–Zn voltaic cell design to demonstrate electrochemical principles of bioelectric potential generation.
- **Transducer and Sensors Laboratory** Islamic University, Kushtia-7003, Bangladesh
Principal Investigator [July, 2020–Present]
 - Led the design, calibration, characterization, and evaluation of biomedical sensors, transducers, and biosensing systems, including thermistors, thermocouples, piezoelectric sensors, LDRs, LVDTs, temperature and glucose biosensors, microfluidic sensors, and Arduino-based optical PPG measurement, with experience in sensor interfacing, data acquisition, and biomolecular analysis.
- **Rehabilitation Engineering Laboratory** Islamic University, Kushtia-7003, Bangladesh
Principal Investigator [January, 2021–Present]
 - Led research and hands-on development in prosthetic and orthotic prototype design, ADL-based disability and functional assessment, gait and human-pose analysis, BCI systems for prosthetic control, and sensor-based assistive technologies such as smart wheelchairs, smart spectacles, walking aids, and VR-based rehabilitation.
- **Bioinformatics Laboratory** Islamic University, Kushtia-7003, Bangladesh
Laboratory Coordinator [January, 2022–Present]
 - Coordinated research activities in drug design, biomarker discovery, and computational approaches to *in silico* diagnosis and treatment.
- **Bioimaging Laboratory** Islamic University, Kushtia-7003, Bangladesh
Laboratory Coordinator [January, 2020–Present]
 - Coordinated research activities in medical imaging, computer vision, and artificial intelligence applications for healthcare.

PUBLICATIONS

Peer-Reviewed Journal Articles

- **Ariful Islam***, Tahmid Islam Akib, “Integrated Bioinformatics and Machine Learning Analysis Identifies MT1F as a Potential Diagnostic Biomarker and Therapeutic Target in Breast Cancer”, *Atlantic Journal of Life Sciences*, 2026.
- Md. Rabiul Islam, **Ariful Islam**, “Adaptive synthetic-based arrhythmia classification using machine learning techniques”, *IAES International Journal of Artificial Intelligence*, 2026.
- Md. Rabiul Islam, **Ariful Islam**, “PSO-ML: Heartbeat Classifier Using Particle Swarm Optimization And Machine Learning Techniques”, *IOSR Journal of Dental and Medical Sciences*, 2023.
- **Ariful Islam**, “The Recording and Evaluation of an ECG Signal with Proper Electrode Placement and Lead Configurations”, *Journal of Clinical Trials and Regulations*, 2021.

Peer-Reviewed Conference Papers

- **Ariful Islam**, Md. Emamul Hossen, “CADT-Net: A Channel Attention and ASPP-Guided CNN-Transformer Framework with Explainable AI for Multi-Class Lung Disease Diagnosis” *Accepted for presentation at the 3rd IEEE COMPAS Conference*, October 09–10, 2026.
- Md. Shahin Ali, **Ariful Islam**, “Alzheimer’s Disease Detection Using m-Random Forest Algorithm with Optimum Feature Extraction” *IEEE*, 2021.

TEACHING EXPERIENCE

- **Department of Biomedical Engineering** Islamic University, Kushtia-7003, Bangladesh
Assistant Professor July 2021 - Present
 - **Responsibilities:** Conducting theoretical and practical classes for both undergraduate and graduate (M.Sc.) in biomedical engineering courses. Responsible for course design, lecture delivery, assessment, and mentoring. Class Volume: Approximately 50 students.
- **Department of Biomedical Engineering** Islamic University, Kushtia-7003, Bangladesh
Lecturer July 2018 - July 2021
 - **Focus:** Taught introductory courses in Biomedical Engineering, mentoring students in research, projects, and technical problem solving relevant to healthcare applications.
- **Department of Geography and Environment** Islamic University, Kushtia-7003, Bangladesh
Guest Teacher February 2022 - March 2024
 - **Course Area:** Delivered lectures on physics in geography for undergraduate students.

RESEARCH GRANTS & AWARDS

- **Project Title:** “Identification of the phenolic components of *Annona muricata* through GC-MS, and assessment of their molecular mechanism for mitigating colorectal cancer—a network pharmacology and in vivo validation approach”
Assistant Investigator FY 2025–2026 BDT 650,000
 - **Funding Agency:** Ministry of Science and Technology (MoST), Government of Bangladesh, under the Special Allocation for Research.
- **Project Title:** “Microplastic inhalation in danger in human respiratory system: An advanced modeling on health impacts from hazardous environment”
Assistant Investigator FY 2024–2025 BDT 500,000
 - **Funding Agency:** Ministry of Science and Technology (MoST), Government of Bangladesh, under the Special Allocation for Research.

TECHNICAL SKILLS

- **Programming:** Python, MATLAB, C, C++
- **Research Tools:** PSpice, Discovery Studio, PyRx, SPSS, GitHub, PyTorch, TensorFlow, scikit-learn,
- **Scientific Writing:** Microsoft Office, LaTeX
- **Languages:** Bengali (Native), English (Professional Proficiency)

ACADEMIC & PROFESSIONAL SERVICES

- **11th Annual Conference of Bangladesh Medical Physics Society** - Poster Presentation: “Machine Learning Based Risk Factors Prediction and In-Silico Exploration of Withania Somnifera Leaf Extracted Nanocomposites for Breast Cancer Inhibition”, January 2024
- **PhD Seminar for Md. Khairul Islam, Dept. of Biomedical Engineering, IU, Bangladesh** - Moderator: “Enhancing Lung Diseases Detection and Classification using Hybrid DCNN-VIT-GRU Model: A Deep Learning Approach”, January 2024
- **Workshop, Centre for Smart Village and Smart City Studies(CSVSCS): Perspective Digital Bangladesh.** Moderator, April 2022
- **Peer Reviewer, Phytomedicine Plus, Elsevier**
- **Associate Editor, Australian Journal of Engineering and Innovative Technology (AJEIT)**
- **Active Participation in departmental Activities:** Including the member of curriculum committee, member of exam-committee, evaluator of internal and external courses, project or thesis dissertations.

PROFESSIONAL AFFILIATIONS & MEMBERSHIPS

- **Ministry of Science and Technology, Government of Bangladesh, Researcher**, ID: R2422302773, 2024–Present
- **Bangladesh Computer Society** – Associate Member
- **Scientific Foundation for Cancer Research** Kushtia-7000, Bangladesh
Founding Member 2021 – Present
A non-profit scientific organization promoting cancer research and public health awareness through biomedical research, blood donation, nutrition, environmental health, and community engagement.

VOLUNTEERING ACTIVITIES

- **Administrative Capabilities at Islamic University, Bangladesh** 2019 - 2021
Assistant Proctor
 - **Key Responsibilities and Contributions:** Maintained campus safety, discipline, and a secure, supportive academic environment by preventing disruptive activities and addressing student concerns. Supported student welfare through COVID-19 response initiatives, including distribution of sanitizer, PPE, and rapid-test kits, as well as accommodation and emergency financial assistance for students in need.
- **Sirajganj Student Welfare Association at Islamic University, Bangladesh** 2019 - 2021
Convenor and Advisor
 - A non-political student organization dedicated to supporting students from Sirajganj District and promoting welfare, cultural activities, and community engagement.