Department of Electrical and Electronic Engineering
Khulna University of Engineering & Technology
Khulna - 9203,Tel:041-769471 (191);Fax :041-774403

**Md. Kamrul Hasan**
Assistant Professor
**Research Area**Personal website at Google Site Watch my research outcomes at YouTube Find me at Google Scholar Artificial Intelligence Medical Image and Signal Analysis

## Biography

Md. Kamrul Hasan, born in Tangail, Bangladesh, in 1992, is presently a PhD candidate in the Department of Bioengineering at Imperial College London (ICL), UK. His research is centered on the innovative application of Artificial Intelligence (AI), particularly Machine Learning and Deep Learning, within the domain of medical image computing. In addition to his doctoral studies, Mr. Hasan holds the position of Assistant Professor (currently on leave) in the Department of Electrical and Electronic Engineering (EEE) at Khulna University of Engineering & Technology (KUET), Bangladesh.

Mr. Hasan's scholarly pursuits are primarily focused on the development of automated AI-driven systems for medical diagnosis in next-generation healthcare applications. He commenced his academic career at KUET, where he earned a B.Sc. in Electrical and Electronic Engineering in 2014, graduating summa cum laude with a CGPA of 3.93/4.00, and securing the first position among 115 students. He subsequently completed his M.Sc. in the same discipline at KUET in 2017, once again graduating summa cum laude with a CGPA of 4.00/4.00.

In 2019, Mr. Hasan further expanded his academic repertoire by obtaining a Master's degree in Medical Imaging and Applications (MAIA) through the distinguished Erasmus Mundus Joint Master Degree program. This degree, conferred by a consortium of the University of Burgundy (France), the University of Cassino and Southern Lazio (Italy), and the University of Girona (Spain), was awarded with a commendable score of 8.48/10.00.

During his MAIA thesis, Mr. Hasan conducted significant research on laparoscopic imaging and AI within the EnCoV research team at Clermont-Ferrand, France, under the guidance of Professor Dr. Adrien Bartoli. His thesis introduced an ART-Net designed to recognize, segment, and extract geometric features for the 3D pose estimation of surgical tools. The segmented masks were utilized to enhance tool-aware augmented reality (AR) in minimally invasive laparoscopy, thereby improving depth perception. Moreover, the 3D tool posture was employed to facilitate 3D measurement and overlay pre-operative 3D models onto real-time laparoscopic images, contributing to advancements in computer-assisted laparoscopy. This pioneering work was subsequently published in the Journal of *Medical Image Analysis (Elsevier)* in 2021.

## Education

**Master of Science in Electrical and Electronic Engineering**
Khulna University of Engineering & Technology (KUET),Bangladesh(2015-2017)
**Thesis Title: Effective Electrodes Position and Features Selection for EEG Based Epilepsy Detection**
**Master of Science in Medical Imaging and Applications**
University of Burgundy (France), University of Cassino and Southern Lazio (Italy), and University of Girona (Spain),France, Italy, and Spain(2017-2019)
**Thesis Title: Detection, Segmentation, and 3D Pose Estimation of Surgical Tools Using Convolutional Neural Networks and Algebraic Geometry**
https://www.sciencedirect.com/science/article/abs/pii/S1361841521000402
**Bachelor of Science**
Khulna University of Engineering & Technology (KUET), Khulna-9203,Bangladesh(2009-2014)

## Service Records

- **Assistant Professor (Part-time)**
  **Department/Section:** Electronics and Communication Engineering (ECE)
  **Khulna University (KU)** *From to*
- **Assistant Professor (Part-time)**
  **Department/Section:** Electrical and Electronic Engineering (EEE)
  **North Western University (NWU)** *From to*
- **Assistant Professor**
  **Department/Section:** Electrical and Electronic Engineering (EEE)
  **Khulna University of Engineering & Technology (KUET)** *From to*
- **Lecturer**
  **Department/Section:** Electrical and Electronic Engineering (EEE)
  **Khulna University of Engineering & Technology (KUET)** *From to*
- **Lecturer**
  **Department/Section:** Electrical and Electronic Engineering (EEE)
  **Daffodil International University (DIU)** *From to*

## Research Interest

**Personal website at Google Site**

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**Artificial Intelligence**
Deep Learning
Machine Learning
Convolutional Neural Networks
Transfer Learning

**Medical Image and Signal Analysis**
Medical Image Classification/ Recognition
Medical Image Registration and Applications
Medical Image Segmentation and Applications
Computer Aided Surgery and Medical Robotics
Computer Aided Diagnosis