

EDUCATION

- **PhD - Computer Engineering (Computer Vision)** Jan 2021 - Present
Arizona State University - Tempe, Arizona, USA
Courses: Physics-Based Computer Vision, Machine Vision & Pattern Recognition, Algorithms, Random Signal Theory
- **MS - Biomedical Science & Engineering** Aug 2018 - Dec 2020
Gwangju Institute of Science and Technology - South Korea
Courses: Computer Vision, Deep Learning, Advanced Deep Learning, Biomedical Optics
- **BSc - Computer Science & Engineering** Feb 2012 - Dec 2017
Jessore University of Science and Technology - Bangladesh

FIELD OF EXPERTISE

Deep Learning, Computer Vision, Optics, Computation Imaging, Data Science

SKILLS SUMMARY

Frameworks	: PyTorch, TensorFlow, Fast.AI, OpenCV, Scikit, NLTK, Flask
Languages	: Python, MATLAB, C/C++, JAVA, SQL, Bash, HTML/CSS
Tools	: GIT, Docker, MySQL
Platforms	: macOS, Linux, GPU-Cluster, Windows, IBM Cloud
Soft Skills	: Leadership, Flexibility, Problem Solving, Creative Thinking, Working under Pressure

PUBLICATIONS

- **Saha Ripon Kumar**, Esen S, Jihoo K, Joseph S, Suren J, *Turbulence Strength C_n^2 Estimation from Video using Physics-based Deep Learning*, Optics Express 2022.
- **Saha Ripon Kumar**, Chowdhury AM, Na KS, Hwang GD, Hwang H, Chung E, *Automated quantification of meibomian gland dropout in infrared meibography using deep learning*, Elsevier: The Ocular Surface 2022.
- Rashid M, Islam M, Sulaiman N, Bari BS, **Saha Ripon Kumar**, Hasan MJ, *Electrocorticography based motor imagery movements classification using long short-term memory (LSTM) based on deep learning approach*, SN Applied Science 2020.

EXPERIENCE

- **Internship (Lightsense Technology)** June 2022 - Aug 2022
 - **Spectral Analysis:** Analyze absorption and emission spectroscopy data of viruses from saliva and buffer solution.
 - **Covid-19 Classification:** Simulate dataset from limited spectra; AI for Covid-19 classification from spectral signatures.
- **Collaborative Research (Alphacore Inc)** Mar 2021-June 2022
 - **Onsite Experiment:** Setup onsite team experiment with several telescopes, weather stations, and scintillometers.
 - **Data Analysis:** Analyze data taken with telescope, drones, cameras, weather stations, and scintillometers.
 - **ML Model:** Design ML model for atmospheric turbulence estimation with focus, light and motion correction.
- **PhD Research Assistant (Imaging Lyceum Lab)** Jan 2021 - Present
 - **Image reconstruction in turbulence:** Designing physics-based deep learning model for dynamic scene restoration affected by atmospheric turbulence taken with Ultra-Zoom or astrophotography camera.
- **MS Research Assistant (NeuroPhotonics Lab - S.Korea)** Aug 2018 - Dec 2020
 - **Tear Film Diagnosis Model:** Multimodal deep learning architecture with GAN inpainting and encoder-decoder based network for segmentation and qualitative analysis of Meibomian Gland [outperformed Ophthalmologist]

PROJECTS

- **Deep Learning based Tear Film Assessment:** Developed multimodal architecture for automated assessment of tear film infrared images to detect/segment out the eye gland area, provide ophthalmologist quality assessment score(Meiboscore) and remove specular reflection. Dataset of 1000 images released. [Model: Encoder-Decoder Structure, Resnet50, GAN]. (2020)
- **Image analysis to detect blood glucose from a contact lens. (Computer Vision):** Developed an architecture to analyze images of custom contact lenses and predict blood glucose level with 85% accuracy [better than spectroscopy]. (2019)
- **Developing Optical Microscopy/Telescope Setup.:** I with some lab members developed Confocal microscopy, Abbe diffraction microscopy and Light-sheet microscopy consisting lens elements, lasers, galvanometers & cameras. (2019-20)

HONORS AND AWARDS

- 1st place in BuildwithAI Hackathon [4,000+ participants, 300+submission, 70+ countries] - July 2020
- Awarded Korean Government Scholarship. - Aug 2019 - Dec 2020