Ripon Kumar Saha

ripon.ece@gmail.com 602-802-9345 | riponcs.github.io | github.com/riponcs | Scholar: Ripon Kumar Saha | linkedin.com/in/riponsaha/

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, Computational Photography, Optics

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

Experience

- **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.
- **Research Assistant (Alphacore Inc)** Mar 2021-Present
  - **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.
- **Research Assistant (Lightsense Technology)** Jan 2021 - Mar 2021
  - **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.
- **Research Assistant (NeuroPhotonics Lab - S.Korea)** Aug 2018 - Dec 2020
  - **Tear Film Diagnosis Model**: Multimodal deep learning architecture with GAN impainting 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, leasers, galvanometers & cameras. (2019-20)

Publications

- **Journal**: **Saha RK**, Chowdhury AM, Na KS, Hwang GD, Hwang H, Chung E, *Automated Quantification of Meibomian gland dropout in infrared meibography using deep learning*, The Ocular Surface 2010. *(Under Review)*
- **Journal**: Rashid M, Islam M, Sulaiman N, Bari BS, **Saha RK**, Hasan MJ, *Electrocorticography based motor imagery movements classification using long short-term memory (LSTM) based on deep learning approach*, SN Applied Science 2020.

Honors and Awards

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