Ripon Kumar Saha

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Education

- **Arizona State University (ASU)** — **Tempe, Arizona, USA**
  PhD - Computer Engineering (Computer Vision) — *Jan 2021 - June 2024*
  Courses: *Physics Based Computer Vision, Algorithms, Random Signal Theory, Machine Vision & Pattern Recognition*

- **Gwangju Institute of Science and Technology (GIST)** — **Gwangju, South Korea**
  MS - Biomedical Science & Engineering — *Aug 2018 - Dec 2020*
  Courses: *Computer Vision, Deep Learning, Advanced Deep Learning, Biomedical Optics*

- **Jessore University of Science and Technology (JUST)** — **Jashore, Bangladesh**
  BSc - Computer Science & Engineering — *Feb 2012 - Dec 2017*

Skills Summary

- **Languages** : Python, MATLAB, C/C++, JAVA, SQL, Bash, HTML/CSS
- **Frameworks** : PyTorch, TensorFlow, Fast.AI, OpenCV, Scikit, NLTK, Flask
- **Tools** : GIT, Docker, MySQL
- **Platforms** : macOS, Linux, Web, Windows, IBM Cloud
- **Soft Skills** : Leadership, Event Management, Writing, Public Speaking, Time Management

Experience

- **Alphacore** — **Tempe, Arizona**
  Researcher (Lab-Collaboration) — *Mar 2021 - Present*
  - **Onsite Experiment**: Setup onsite team experiment with several telescopes, weather stations, and Scintillometers.
  - **Data Analysis**: Analyze Data taken with Telescope, Drones, camera, Weather Stations, and Scintillometers.
  - **ML Model**: Design ML model for Atmospheric Turbulence estimation with Focus, light and motion correction.

- **Lightsense Technology** — **Remote**
  Researcher (Lab-Collaboration) — *Jan 2021 - Present*
  - **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.

- **Imaging Lyceum Lab** — **Tempe, Arizona**
  Researcher (Supervisor: Suren Jayasuriya) — *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.

- **NeuroPhotonics Lab** — **Gwangju, South Korea**
  Researcher (Supervisor: Euiheon Chung) — *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 lens 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 consists of lens element, leaser, galvanometer & multiple 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
- 1^{st} Runners-up in the National Math Olympiad Bangladesh.[5400 participants]