Ripon Kumar Saha

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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, Optical Engineering, Computation Photography, Data Analysis, NLP

Relevant Courses

- Deep Learning
- Advanced Deep Learning
- Computational Vision
- Random Signal Analysis
- Physics-based Computer Vision
- Vision & Pattern Recognition

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. CiteScore: **7.1**
- **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*, The Ocular Surface 2022. CiteScore: **14.1**
- 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. IF: **2.1**

Experience

Intern, Lightsense Technology, June 2022 - Aug 2022
- Conducted spectral analysis of viruses in saliva and buffer solutions.
- Developed AI model for Covid-19 classification based on spectral data.

Researcher, Alphacore Inc, Mar 2021 - Jun 2022
- Led onsite experiment setup with telescopes and weather stations and scintillometer.
- Analyzed multidimensional data from various sensors.
- Designed machine learning model for atmospheric turbulence estimation.

PhD Research Assistant, Imaging Lyceum Lab, Jan 2021 - Present
- Developed physics-based deep learning model for dynamic scene restoration.
- Focused on challenges posed by atmospheric turbulence in Ultra-Zoom and astrophotography cameras.

MS Research Assistant, NeuroPhotonics Lab, S.Korea, Aug 2018 - Dec 2020
- Developed multimodal deep learning architecture for Meibomian Gland analysis.
- Utilized GAN impainting and encoder-decoder networks; outperformed ophthalmologists in diagnoses.

Projects

Deep Learning-based Tear Film Assessment, 2020
- Developed a multimodal deep learning model for tear film infrared image analysis.
- Achieved ophthalmologist-level quality assessment with Meiboscore.
- Technologies used: Encoder-Decoder Structure, Resnet50, GAN.
- Released a dataset of 1,600 infrared images for public use.

Blood Glucose Prediction via Computer Vision, 2019
- Created a model to analyze custom contact lens images.
- Achieved 85% accuracy in predicting blood glucose levels.
- Outperformed traditional spectroscopy methods.

Optical Microscopy/Telescope Setup, 2019-2020

- Collaboratively developed multiple types of microscopes: Confocal, Abbe diffraction, and Light-sheet.
- Involved in the setup of lens elements, lasers, galvanometers, and cameras.

Honors and Awards

- First place winner out of 4,000+ participants from 70+ countries in BuildwithAI Hackathon (July 2020)
- Reviewer for esteemed journals including IEEE Access, Journal of Optics Express, and Applied Optics.
- General Secretary and primary contact person for Bangladesh Student Association of Arizona State University.
- Recipient of "Most Active Online Attendee Award" at the European Conference on Computer Vision (ECCV) 2020.