Thamidul Islam Tonmoy

Bioengineering PhD Candidate – Biomedical Imaging | Optical Systems | Machine Learning
Website | LinkedIn | Google Scholar
211 Barret Road, Riverside, CA 92507
Phone: (951) 907 8287 Email: titonmoy@outlook.com

Profile Summary

Results-driven Bioengineering PhD with 5+ years of experience in developing biomedical imaging systems, image analysis tools, and AI algorithms for translational research. Proven expertise in polarization-sensitive optical coherence tomography (PS-OCT), medical image processing, and interdisciplinary R&D. Seeking to apply technical and analytical skills in an innovative healthcare or biomedical technology setting.

Education

- **Ph.D. in Bioengineering**
  University of California Riverside | 2019 – Present
- **M.Sc. in Bioengineering**
  University of California Riverside | 2023
- **B.Sc. in Electrical and Electronic Engineering**
  Bangladesh University of Engineering & Technology | 2017

Technical Skills

- **Optical Imaging & Instrumentation:** Extensive experience in aligning, and optimizing optical imaging systems, specifically with polarization-sensitive optical coherence tomography (**PS-OCT**).
- **Simulation:** Working experience in simulating optical systems with **Zemax** and physical systems with **COMSOL**.
- **3D Design:** Proficient in designing 3D systems with **SolidWorks** and **Fusion 360**.
- **Image Processing:** Extensive experience in signal and image processing, filtering, edge detection, segmentation, and 2D/3D visualization using **MATLAB, Amira**, and **Seg3D**.
- **Machine Learning & AI:** Strong background in developing machine learning models with proficiency in machine learning libraries such as **Keras**, **TensorFlow**, **OpenCV**, and **Scikit-Learn**.
- **Programming Languages:** Extensive experience with **MATLAB** with proficiency in **C/C++, C#**, and **Python**. Working experience with **CUDA** and **Intel Performance Primitives** for GPU and CPU multi-threaded applications.

Professional Experience

Graduate Researcher

Optical Neural Imaging Lab
University of California Riverside I 2020 - Present

- Developed and optimized PS-OCT systems for neural and musculoskeletal tissue imaging
- Integrated MEMS mirrors and motorized translation stages for extended scanning fields
- Analyzed peripheral nerve regeneration and muscle tissue constructs in animal models
- Designed machine learning algorithms to quantify true birefringence
- Contributed to multiple peer-reviewed publications and cross-functional collaborations

Teaching Assistant

University of California Riverside | 2020 - Present

- **Courses:** General Physics Laboratory, Neuroscience Laboratory, Overview of Bioengineering, Biophysics & Biothermodynamics, Introduction to Biomedical Optical Imaging, Senior Design, Integration of Computational and Experimental Biology
- Assisted students in lab courses, simulation software, and design projects

Research Assistant

Digital Signal Processing Research Lab

Bangladesh University of Engineering & Technology | 2016 - 2019

- Developed machine learning models for camera model identification for digital forensic traffic sign detection in autonomous vehicle
- Conducted Comparative studies on breast cancer classification using histological images

Leadership & Engagement

- ### Vice President

  UCR Photonics Society | (2023 - 2024)

  Co-led the society's initiatives and events, fostering a community for students interested in photonics.
- ### Secretary

  UCR Photonics Society | (2022 - 2023)

  Managed communications and official records for the society.
- ### Secretary

  Bioengineering Graduate Student Association | (2020 – 2021)

  Maintained records and assisted in the coordination of graduate student activities and events.

Selected Publication

- Youyi Tai, **Thamidul Islam Tonmoy**, Shwe Win, Natasha T. Brinkley, B. Hyle Park, and Jin Nam. "Enhanced peripheral nerve regeneration by mechano-electrical stimulation." *NPJ Regenerative Medicine* 8, no. 1 (2023): 57.
- Abdul Muntakim Rafi, **Thamidul Islam Tonmoy**, Uday Kamal, QM Jonathan Wu, and Md Kamrul Hasan. "RemNet: remnant convolutional neural network for camera model identification." *Neural Computing and Applications* 33 (2021): 3655-3670.
- Uday Kamal, **Thamidul Islam Tonmoy**, Sowmitra Das, and Md Kamrul Hasan. "Automatic traffic sign detection and recognition using SegU-Net and a modified Tversky loss function with L1-constraint." *IEEE Transactions on Intelligent Transportation Systems* 21, no. 4 (2019): 1467-1479.