

JATHURSHAN PRADEEPAKUMAR

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RESEARCH INTERESTS

Cancer	Interpretable ML	Computational Medicine	Deep Learning
Clinical Decision Making	AI for Health	Computational Imaging	Computational Biology

RESEARCH EXPERIENCE

The Center for Advanced Imaging, Harvard University *July 2022 - Present*

Post-Baccalaureate Fellow

Advisors: Dr. Dushan Wadduwage and Dr. Sergey Ovchinnikov.

The Center for Advanced Imaging, Harvard University *Sept 2021 - June 2022*

Remote Visiting Undergraduate Research Fellow

Advisor: Dr. Dushan Wadduwage.

Biomedical Research Group, University of Moratuwa, Sri Lanka *June 2021 - July 2022*

Undergraduate Thesis Research Student

Advisors: Dr. Anjula C. De Silva and Dr. Chamira Edussooriya.

External Collaborator: Dr. Simon L. Kappel.

University of Melbourne, Australia *Nov 2020 - Dec 2021*

Remote Research Internship

Advisor: Dr. Sam John

Trainee Research Engineer - Internship *Oct 2020 - Mar 2021*

Synergen Technology Labs (Pvt) Ltd, Sri Lanka

Biomedical Research and Innovation Collective (theBRIC) *Oct 2020 - June 2022*

Part-time Researcher

EDUCATION

University of Moratuwa, Sri Lanka *2018 - 2022*

CGPA : **3.97/4.2** (First Class Honours)

B.Sc Engineering (Hons) in Biomedical Engineering

PUBLICATIONS

Preprints:

- **Pradeepkumar, Jathurshan***, M. Anandakumar*, V. Kugathasan*, D. Suntharalingham, S. L. Kappel, A. C. De Silva, and C. U. Edussooriya, “Towards interpretable sleep stage classification using cross-modal transformers,” arXiv. (*Under Review at IEEE Journal of Biomedical and Health Informatics (Impact Factor: 7.41)*)[[paper](#)] [[code](#)]
- M. Anandakumar*, **Pradeepkumar, Jathurshan***, S. L. Kappel, C. U. Edussooriya, and A. C. De Silva, “A knowledge distillation framework for enhancing ear-EEG based sleep staging with scalp-EEG data,” arXiv. (*Under Review at ICASSP 2023*)[[paper](#)] [[code](#)]
- **Pradeepkumar, Jathurshan***, M. Anandakumar*, V. Kugathasan*, A. Seeber, and D. N. Wadduwage, “Physics augmented u-net: A high-frequency aware generative prior for microscopy,” bioRxiv. [[paper](#)]

Peer-reviewed Conference Papers:

- M. Afham*, U. Haputhanthri*, **Pradeepkumar, Jathurshan***, M. Anandakumar, A. De Silva, and C. U. Edussooriya, “Towards accurate cross-domain in-bed human pose estimation,” in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). pp. 2664–2668.[[paper](#)][[code](#)]

*These authors contributed equally to the work.

- **Pradeepkumar, Jathurshan, M. Anandakumar, V. Kugathasan, T. D. Lalitharatne, A. C. De Silva, and S. L. Kappel, “Decoding of hand gestures from electrocorticography with lstm based deep neural network,”** in 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). pp. 420–423.[\[paper\]](#)[\[slides\]](#)

Theses:

- **Pradeepkumar, Jathurshan, M. Anandakumar, V. Kugathasan, and D. Suntharalingham, “Interpretable Multi-Modal Sleep Monitoring System using Ear-EEG and EOG.”** *Undergraduate Graduation Project Report, University of Moratuwa, Sri Lanka.*
Grade : 4.2/4.2.[\[thesis\]](#)

Manuscript Under Preparation:

- R. Thushara*, **Pradeepkumar, Jathurshan***, and D. N. Wadduwage, **“DNA damage analysis using deep learning based cell nuclei detection and quantification.”**(Collaborative work with Prof. Bevin Engelward)
- **Pradeepkumar, Jathurshan***, M. Anandakumar*, A. Seeber, and D. N. Wadduwage, **“FMA-Net: Forward Model Agnostic Image Reconstruction for Structured Illumination Microscopy.”**
(*Updated and extended work on physics augmented U-Net.*)

HONORS AND AWARDS (SELECTED)

First Class (Honours) - (GPA above 3.7)	<i>2022</i>
Dean’s List for 7 semesters	<i>2022</i>
Second-Runners up at Video and Image Processing Cup (International)	<i>2021</i>
- International Conference on Image Processing (ICIP), Anchorage, Alaska, USA.	
IEEE SMC Winners at BR4IN.IO Hackathon (International)	<i>2020</i>
- IEEE System, Man and Cybernetics Conference, Toronto, Ontario, Canada.	
Mahapola Merit Scholarship for best performance in university entrance examinations	<i>2017</i>
CASS Student Design Competition (Selected to the regional level)	<i>2020-2021</i>
Champions of Brainstorm (National Biomedical Design Competition)	<i>2019</i>
Champions of SLIoT Competition (National IoT Design Competition)	<i>2019</i>
Champions of Moraventures 5.0 (National)	<i>2019</i>
Runners-up in IEEE Innovation Nation and HackX Competitions (National)	<i>2019</i>
Second Runners-up at Datastorm v2 (National Data science Competition)	<i>2021</i>
Bronze Medal at National Physics Olympiad	<i>2016</i>

TALKS AND PROFESSIONAL SERVICE ACTIVITIES

Served as a reviewer at ECCV (L2ID workshop) 2022 and ICASSP 2023	
Invited talk on my thesis project at Center for ear-EEG Aarhus University, Denmark.	<i>2022 .</i>
Presentation on my thesis project at CCAIM summer school. (link)	<i>2022</i>
Workshops on healthcare research and light field processing	<i>2021</i>
IEEE EMBS International Student Conference	

LEADERSHIP AND VOLUNTEERING ACTIVITIES

Teaching Assistant	<i>2022</i>
EN1802 Basic Electronics, EN2550 Fundamentals of Image Processing and Machine Vision, EN3900 Seminar	
Project Mentor - Spark Challenge	<i>2022</i>
Mentored an undergraduate team at the spark challenge competition.	
IEEE Engineering in Medicine & Biology Student Chapter	
Council Member	<i>2021-2022</i>
Secretary	<i>2020-2021</i>
Assistant Treasurer	<i>2019-2020</i>
Student Representative of Biomedical Engineering Department	<i>2018-2019</i>