

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 Post-Baccalaureate Fellow Advisors: Dr. Dushan Wadduwage and Dr. Sergey Ovchinnikov.	<i>July 2022 - Present</i>
The Center for Advanced Imaging, Harvard University Remote Visiting Undergraduate Research Fellow Advisor: Dr. Dushan Wadduwage.	<i>Sept 2021 - June 2022</i>
Biomedical Research Group, University of Moratuwa, Sri Lanka Undergraduate Thesis Research Student Advisors: Dr. Anjula C. De Silva and Dr. Chamira Edussooriya. External Collaborator: Dr. Simon L. Kappel.	<i>June 2021 - July 2022</i>
University of Melbourne, Australia Remote Research Internship Advisor: Dr. Sam John	<i>Nov 2020 - Dec 2021</i>
Trainee Research Engineer - Internship Synergen Technology Labs (Pvt) Ltd, Sri Lanka	<i>Oct 2020 - Mar 2021</i>
Biomedical Research and Innovation Collective (theBRIC) Part-time Researcher	<i>Oct 2020 - June 2022</i>

EDUCATION

University of Moratuwa, Sri Lanka CGPA : 3.97/4.2 (First Class Honours) B.Sc Engineering (Hons) in Biomedical Engineering	<i>2018 - 2022</i>
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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. Kugathan, 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. Kugathan, 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)	2022
Dean’s List for 7 semesters	2022
Second-Runners up at Video and Image Processing Cup (International)	2021
- International Conference on Image Processing (ICIP), Anchorage, Alaska, USA.	
IEEE SMC Winners at BR4IN.IO Hackathon (International)	2020
- IEEE System, Man and Cybernetics Conference, Toronto, Ontario, Canada.	
Mahapola Merit Scholarship for best performance in university entrance examinations	2017
CASS Student Design Competition (Selected to the regional level)	2020-2021
Champions of Brainstorm (National Biomedical Design Competition)	2019
Champions of SLIoT Competition (National IoT Design Competition)	2019
Champions of Moraventures 5.0 (National)	2019
Runners-up in IEEE Innovation Nation and HackX Competitions (National)	2019
Second Runners-up at Datastorm v2 (National Data science Competition)	2021
Bronze Medal at National Physics Olympiad	2016

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.	2022 .
Presented my thesis project at CCAIM summer school. (link)	2022
Workshops on healthcare research and light field processing	2021
- IEEE EMBS International Student Conference	

LEADERSHIP AND VOLUNTEERING ACTIVITIES

Teaching Assistant	2022
EN1802 Basic Electronics, EN2550 Fundamentals of Image Processing and Machine Vision, EN3900 Seminar	
Project Mentor - Spark Challenge	2022
Mentored an undergraduate team at the spark challenge competition.	
IEEE Engineering in Medicine & Biology Student Chapter	2019-2022
Council Member(2021/22), Secretary (2020/21), Assistant Treasurer (2019/20)	
Event Coordinator - IEEE Signal Processing Society Student Chapter	2020-2021
Student Representative of Biomedical Engineering Department	2018-2019

References available upon request