PRITAM SARKAR

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RESEARCH INTERESTS

self/un-supervised learning, multi-modal (vision+x) representation learning, computer vision, wearable data analysis.

EDUCATION

Doctor of Philosophy **May 2020 - present**
Dept. of Electrical and Computer Engineering, Queen's University *Kingston, Canada*
Advisor: Prof. Ali Etemad
GPA: 4.3/4.3

Master Applied Science **Sept 2018 - Apr 2020**
Dept. of Electrical and Computer Engineering, Queen's University *Kingston, Canada*
Thesis title: Self-Supervised ECG Representation Learning for Affective Computing.
Advisor: Prof. Ali Etemad
GPA: 3.8/4.3

Bachelor of Technology **Aug 2011 - Jul 2015**
Dept. of Electrical Engineering, West Bengal University of Technology *Kolkata, India*
Rank 4 of 150 in graduating class of Electrical Department.
GPA: 8.84/10

PUBLICATIONS

As per google scholar, my publications have total citations of approx. 180 with h-index 6.

Conferences

7. **P. Sarkar**, A. Posen, A. Etemad, "AVCAffe: A Large Scale Audio-Visual Dataset of Cognitive Load and Affect for Remote Work", *arxiv:2205.06887, 2022, Under Review*.
6. **P. Sarkar**, A. Etemad, "Self-supervised Audio-Visual Representation Learning with Relaxed Cross-Modal Synchronicity", *arxiv:2111.05329, 2021, Under Review*.
5. **P. Sarkar**, A. Etemad,"CardioGAN: Attentive Generative Adversarial Network with Dual Discriminators for Synthesis of ECG from PPG", ***AAAI***, *2021*.
4. R. Phinnemore, G. Cimolino, **P. Sarkar**, A. Etemad, T.C. N. Graham, "Happy Driver: Investigating the Effect of Mood on Preferred Style of Driving in Self-Driving Cars". *HAI, 2021*.
3. **P. Sarkar**, A. Etemad, "Self-supervised Learning for ECG-based Emotion Recognition", ***ICASSP***, *2020*.
2. **P. Sarkar**, K. Ross, A. Ruberto, D. Rodenburg, P. Hungler, A. Etemad, "Classification of Cognitive Load and Expertise for Adaptive Simulation using Deep Multitask Learning", *ACII, 2019*.
1. **P. Sarkar**, V. Davoodnia, A. Etemad, "Computer-Aided Diagnosis using Class-Weighted Deep Neural Networks", *ICMLA, 2019*.

Journals

4. **P. Sarkar***, S. Lobmaier*, B. Fabre, G. Berg, A. Mueller, M. G. Frasch, M. C. Antonelli, A. Etemad, "Detection of Maternal and Fetal Stress from ECG with Self-supervised Representation Learning", ***Scientific Reports***, 2021.
3. **P. Sarkar**, A. Etemad, "Self-supervised ECG Representation Learning for Emotion Recognition", ***IEEE Transactions on Affective Computing***, *2020*.
2. A. Ruberto, D. Rodenburg, K. Ross, **P. Sarkar**, P. Hungler, A. Etemad, D. Howes, D. Clarke, J. McLellan, D. Wilson, A. Szulewski, "The future of simulation based medical education: Adaptive simulation utilizing a deep multitask neural network", *AEM Education and Training, 2021*.
1. K. Ross, **P. Sarkar**, D. Rodenburg, A. Ruberto, P. Hungler, D. Howes, A. Szulewski, A. Etemad, "Toward Dynamically Adaptive Simulation: Multimodal Classification of User Expertise using Wearable Devices", *Sensors, 2019*.

Patents

1. **P. Sarkar**, A. Etemad, "Title withheld", US Patent Application, 63/085,394, 2020.

EXPERIENCE

Research Assistant, *Queen's University, Canada* *Aug 2018 - Present*
I am a Research Assistant at *Ingenuity Lab* and *AIIM Lab* at Queen's University. My research is primarily focused on self-supervised learning, to learn meaningful representations without (or with minimal) human supervision. Please see my website to find out more about my research.

Postgraduate Affiliate, *Vector Institute, Canada* *Mar 2021 - Present*

Teaching Assistant, *Queen's University, Canada* *Aug 2018 - Present*

- Head Teaching Assistant for ELEC 472 (Artificial Intelligence and Interactive Systems) in winter 2022.
- Teaching Assistant for ELEC 472 (Artificial Intelligence and Interactive Systems) in winter 2021.
- Course Developer for ELEC 252 (Electronics I) in Fall 2020.
- Teaching Assistant for APSC 143 (Introduction to Computer Programming for Engineers) in Fall 2019.
- Course Developer for ELEC 472 (Artificial Intelligence and Interactive Systems) in summer 2019.

Sr. System Engineer, *Infosys Ltd., India* *Dec 2017 - Jul 2018*

Software Engineer, *Tech Mahindra Ltd., India* *Nov 2015 - Nov 2017*

ACADEMIC SERVICE

Mentorship

- Aaron Posen, ECE at Queen's University, undergrad final year project, 2021.
- Rachel Phinnemore, CS at Queen's University, undergrad final year project, 2020.

Reviewing

- ECCV Workshop on Visual Object-oriented Learning meets Interaction (VOLI), 2022.
- European Conference on Computer Vision (ECCV), 2022.
- IEEE Transaction of Artificial Intelligence, (T-AI), 2022 - Present.
- IEEE Affective Computing and Intelligent Interaction, (ACII), 2021, 2022.
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2020.
- ACM Symposium on Applied Perception (SAP), 2019.
- IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2019, 2020.

Organizing workshops and conferences

- Workflow chair at AAAI 2022 Workshop on Human Centric Self-supervised Learning.
- Served in the organizing committee of AI/GI/CRV Conference, 2019.

Memberships/Others

- Student Rep. in Graduate Studies Academic Advisory (GSAC) Committee, Dept. of ECE, Queen's University, 2020 - 2021.
- PhD Rep. at Graduate Electrical and Computer Engineering (GECE) student council, Queen's University, 2020 - 2021.
- IEEE Graduate Student Member, 2020 - Present.
- Member of IEEE Signal Processing Society (IEEE SPS), 2020 - 2021.
- Member of Association for the Advancement of Affective Computing (AAAC), 2019 - 2021.

TALKS

- Poster presentation at Robotics and AI Symposium, Ingunity Labs, 2021.
- Paper talk at AAAI, 2021.
- Paper talk at ICASSP, 2020.
- Poster presentation at FEAS Research Symposium, Queen's University, Canada, 2019.
- Paper talk at ACII, 2019.

ACADEMIC ACHIEVEMENTS/AWARDS

- Best poster award at Robotics and AI Symposium, (RAIS), Ingenuity Labs, 2021.
- Postgraduate Affiliate Award, Vector Institute, 2021 - Present.
- Graduate Research Fellowship, Queen's University, 2020 - Present.
- Graduate Research Scholarship, Queen's University, 2019 - 2020.

SKILLS

Deep Learning: PyTorch*, TensorFlow
Programming Languages: Python*, MATLAB, C, SQL, PL/SQL, HTML, CSS, UNIX
Applications: Oracle Cloud, OA Framework, Oracle ADF, Oracle eBusiness Suite, XML and BI Publisher
Database: MySQL, Oracle

* indicates primary preference

CREATIVE INTERESTS

- Short-Film Making and Photography