

PRITAM SARKAR

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RESEARCH INTERESTS

Currently, I am a Ph.D. student at *Queen's University* and Postgraduate Affiliate at *Vector Institute*. My primary research interests include self/un-supervised learning, computer vision, video understanding, and multi-modal (i.e., vision-language, audio-visual) representation learning. Additionally, I am interested in the areas of continual learning, generative models, and time-series representation learning among a few others. Recently, I have also grown interests in the areas of responsible AI including privacy, fairness, and security of deep learning models.

EDUCATION

Doctor of Philosophy

Dept. of Electrical and Computer Engineering, Queen's University

Advisor: Prof. Ali Etemad

GPA: 4.3/4.3

May 2020 - present

Kingston, Canada

Master Applied Science

Dept. of Electrical and Computer Engineering, Queen's University

Thesis title: Self-Supervised ECG Representation Learning for Affective Computing.

Advisor: Prof. Ali Etemad

GPA: 3.8/4.3

Sept 2018 - Apr 2020

Kingston, Canada

Bachelor of Technology

Dept. of Electrical Engineering, West Bengal University of Technology

Rank 4 of 150 in graduating class of the Department of Electrical Engineering.

GPA: 8.84/10

Aug 2011 - Jul 2015

Kolkata, India

PUBLICATIONS

As per [google scholar](https://scholar.google.com/citations?user=pritam.sarkar), my publications have total citations of approx. 240 with h-index 6.

Conferences

8. **P. Sarkar**, A. Etemad, "XKD: Cross-modal Knowledge Distillation with Domain Alignment for Video Representation Learning", *arxiv:2211.13929*, 2022, *Under Review CVPR*.
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, **AAAI**, 2023.
6. **P. Sarkar**, A. Etemad, "Self-supervised Audio-Visual Representation Learning with Relaxed Cross-Modal Synchronicity", *arxiv:2111.05329*, 2021, **AAAI**, 2023.
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

Machine Learning Research Intern at Borealis AI, Canada

Sept 2022 - Dec 2022

My internship was focused on working with asynchronous time series data with Diffusion (generative) models.

Postgraduate Affiliate at Vector Institute, Canada

Mar 2021 - Present

Research Assistant at Queen's University, Canada

Sept 2018 - Present

My research is primarily focused on self-supervised learning, to learn meaningful representations without (or with minimal) human supervision. Please see my [website/publications](#) to find out more about my research.

Lecturer/Teaching Assistant at Queen's University, Canada

Sept 2018 - Present

- Guest Lecturer for ELEC 872 (Artificial Intelligence and Interactive Systems), Fall 2022.
- Head Teaching Assistant for ELEC 472 (Artificial Intelligence) in winter 2023.
- Head Teaching Assistant for ELEC 472 (Artificial Intelligence) in winter 2022.
- Teaching Assistant for ELEC 472 (Artificial Intelligence) 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 at Infosys Ltd., India

Dec 2017 - Jul 2018

Software Engineer at 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/PC Member

- Computer Vision and Pattern Recognition (CVPR), 2023.
- European Conference on Computer Vision (ECCV), 2022.
- IEEE Transactions on Affective Computing (T-AFFC), 2022 - Present.
- IEEE Transactions on Artificial Intelligence (T-AI), 2021 - Present.
- IEEE Affective Computing and Intelligent Interaction (ACII), 2021, 2022.
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2020.
- IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2019, 2020.
- ACM Symposium on Applied Perception (SAP), 2019.
- ECCV Workshop on Visual Object-oriented Learning meets Interaction (VOLI), 2022.

Organizing workshops and conferences

- Workflow and Publicity Chair AAAI 2023 Workshop on Representation Learning for Responsible Human-centric AI ([R2HCAI](#)).
- Workflow chair at AAAI 2022 Workshop on Human Centric Self-supervised Learning ([HCSSL](#)).
- 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.

ACADEMIC ACHIEVEMENTS/AWARDS

- Best Poster Honourable Mention at FEAS Research Symposium at Queen's University, 2022.
- Best Poster Honourable Mention at Robotics and AI Symposium at Ingenuity Labs, 2022.
- Best Poster Award at Robotics and AI Symposium at 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

* indicates primary preference

CREATIVE INTERESTS

- Short-Film Making and Photography