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Sneha Paul

PhD student

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Google Scholar

I'm a Ph.D. Candidate at Concordia University, Canada. My research focuses on multimodal unsupervised representation learning and natural language processing. A summary of my profile is as follows: published in several renowned conferences (such as *CVPR, ECCV*) and journals; skilled in Python and different machine learning libraries; experienced in deep learning methods and model designing, training, and deployment.

Research & Professional Experience

Research Intern **03/2026-present**
Noah's Ark Lab, Huawei Technlologies *Toronto, ON, CA*

- Research topic: Feed-forward 3D scene reconstruction and physical property estimation.

Research Intern **01/2023-08/2023**
BusPas Inc. *Montreal, QC, CA*

- Research topic: Semantic segmentation of Fish-eye images for autonomous driving.
- Developed a supervised fish-eye semantic segmentation framework based on transfer learning, published as a conference paper at ICMLA'23.
- Developed a semi-supervised fish-eye semantic segmentation framework, published and achieved the best paper award at TRB'24. The extended version of this work was published in the Journal of Imaging.

Research Intern **01/2022-03/2022**
Niosense *Montreal, QC, CA*

- Research topic: Challenges of Data Integration in Digital Twin: A Review.
- Performed extensive literature review on the existing literature data integration for Digital Twin at road intersections.

Graduate Research Assistant **09/2021-present**
Concordia Institute of Information Systems Engineering (CIISE), Concordia University *Montreal, QC, CA*

- Research Area: Unsupervised learning, representation learning, computer vision.

Lecturer **07/2019-06/2021**
Department of Urban and Regional Planning, Khulna University of Engineering & Technology (KUET) *Khulna, Bangladesh*

Education

Doctor of Philosophy (Ph.D.) in Information and Systems Engineering **01/2023 — Present**
Concordia University *Montreal, QC, Canada*

- Expected Graduation: Fall 2026
- Thesis: Unsupervised visual representation learning for special computer vision modalities.
- CGPA: 4.20/4.30 (as of Summer 2025)

Master of Applied Science (MASc) in Quality Systems Engineering **09/2021 — 12/ 2022**
Concordia University *Montreal, QC, Canada*

- Thesis: An efficient neural network architecture and training protocol for 3D point cloud classification.
- CGPA: 4.15/4.30

Bachelor of Science (BSc) in Urban and Regional Planning **04/2015 — 05/2019**
Khulna University of Engineering & Technology *Khulna, Bangladesh*

- CGPA: 3.80/4.00
- 1st class 1st, gold medalist (selected for the upcoming graduation ceremony)

Skills

DL/ML Frameworks	PyTorch, TensorFlow, JAX, Keras, NumPy, SciPy, Scikit-learn
Programming Language	Python, C
Version Control & Exp. track	Git, Weights & Biases, TensorBoard
Computing, Cloud, and HPC	AWS, Google Colab, SLURM
Database and Deployment	MySQL, Oracle, Apache Spark, Docker
ML expertise	training, fine-tuning, deployment, multi-modal learning, computer vision, semi-supervised learning, self-supervised learning
Soft Skills	Technical writing (10+ publications), problem solving, critical thinking and analysis
Communication	English (IELTS band 7.5)

Awards and Scholarships

Best Paper Award, TRB AED30 Information Systems and Technology Committee **01/2024**
Transportation Research Board 103rd Annual Meeting *Washington DC, USA*
CIRRELT Doctoral Excellence Scholarship **01/2024**
Centre interuniversitaire de recherche sur les reseaux d'entreprise, la logistique et le transport (CIRRELT), *Montreal, Canada*
Concordia University International Tuition Award Excellence **2023**
Concordia University *Montreal, Canada*
Concordia University Graduate Studies Conference and Exposition Award **2022, 2023**
Concordia University *Montreal, Canada*
CIRRELT Masters' Excellence Scholarship **01/2022**
Centre interuniversitaire de recherche sur les reseaux d'entreprise, la logistique et le transport (CIRRELT), *Montreal, Canada*
University Gold Medal (selected) **Upcoming Convocation Ceremony**
Khulna University of Engineering & Technology, *Khulna, Bangladesh*
Dean's Award for excellent performance **2016, 2018, 2019**
Khulna University of Engineering & Technology, *Khulna, Bangladesh*
Academic Scholarship **2015-2019**
Khulna University of Engineering & Technology, *Khulna, Bangladesh*

Publications

1. ***Sneha Paul*** Zachary Patterson & Nizar Bouguila, 'Fine-Tuning without Forgetting: Generalizable Adaptation of 3D Vision-Language Models', under-review at TMLR.
2. ***Sneha Paul*** Zachary Patterson & Nizar Bouguila, 'Point Cloud as a Foreign Language for Multi-modal Large Language Model', Conference on Computer Vision and Pattern Recognition (**CVPR-26**).
3. ***Sneha Paul*** Zachary Patterson & Nizar Bouguila, 'An Adapter-free Fine-tuning Approach for Tuning 3D Foundation Models', International Conference on Pattern Recognition and Artificial Intelligence (**ICPRAI-26**).
4. ***Sneha Paul*** Zachary Patterson & Nizar Bouguila, 'Improving 3D Semi-supervised Learning by Effectively Utilizing All Unlabelled Data', European Conference on Computer Vision (**ECCV-24**). [Project Page]
5. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'FishSegSSL: A Semi-supervised Semantic Segmentation Framework for Fish-eye Images', Journal of Imaging (2024).
6. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'Semi-supervised Semantic Segmentation on Vehicle-mounted Fish-eye Camera Images', Transportation Research Board 103rd Annual Meeting (**TRB-24**).
7. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'Semantic Segmentation Using Transfer Learning on Fisheye Images', 22nd International Conference on Machine Learning and Applications (**ICMLA-23**).
8. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'A Multi-layer Perceptron-based Two-stream Fusion Model for 3D Point Cloud Classification', The Visual Computer Journal (2023).
9. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'CrossMoCo: Multi-modal Momentum Contrastive Learning for Point Cloud', 20th Conference on Robots and Vision (**CRV-23**).
10. ***Sneha Paul***, Zachary Patterson & Nizar Bouguila, 'Improved Training for 3D Point Cloud Classification', IAPR Joint International Workshops on Statistical Techniques in Pattern Recognition and Structural and Syntactic Pattern Recognition (**S+SSPR-22**).
11. ***Sneha Paul*** & Shuvendu Roy, 'Forecasting the Average Temperature Rise in Bangladesh: A Time Series Analysis', Journal of Engineering Science.
12. Shuvendu Roy & ***Sneha Paul***, 'Land-Use Detection Using Residual Convolutional Neural Network', International Conference on Advances in Science, Engineering and Robotics Technology (**ICASERT-19**).

Academic Services

Exam Invigilator
Concordia Univeristy, Montreal, Canada

Reviewer
- British Machine Vision Conference (BMVC-25)
- Computer Vision and Pattern Recognition (CVPR-25)
- International Conference on Learning Representations (ICLR-25)
- European Conference on Computer Vision (ECCV-24)
- International Conference on Machine Learning and Applications (ICMLA-23)
- International Conference on Robots and Vision (CRV-23)
- Pattern Recognition
- IEEE Transactions on Industrial Informatics (TII)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- Engineering Applications of Artificial Intelligence