



# Samrat Mukherjee

Doctor of Philosophy  
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## EDUCATION

Degree	Institute	CGPA	Year
Ph.D.	Indian Institute of Technology, Bombay	8.94	2023-Ongoing
M.Tech.	Indian Institute of Technology, Patna	9.69	2023
B.Tech.	Government College of Engineering and Leather Technology, Kolkata	9.34	2021

## PROJECTS

- Few-shot class incremental point cloud segmentation** *Feb. 2024 - Ongoing*  
*Under review: CVPR 2025*
  - Introduced Hyperbolic space representation learning for better capturing hierarchical nature of point clouds.
  - Achieved  $\sim 5\%$  improvement in Accuracy and Forgetting measures overall on ScanNetv2 dataset.
- Unsupervised Incremental Domain Adaptation through Adaptive Prompting** *Feb. 2024 - Ongoing*  
*Under review: ICASSP 2025*
  - Proposed a method to learn from continually changing unlabeled target data while remembering past data.
  - Achieved  $\sim 20\%$  improvement in Accuracy and Forgetting measures overall on DomainNet dataset.
- Reliability enhancement of Deep Neural networks against Adversarial examples.** *Feb. 2024 - May. 2024*  
*Course project / Optimization in Machine Learning / Supervised by. Prof. G. Ramakrishnan / IIT Bombay*
  - Estimated Sample difficulty using pre-trained models to measure the difficulty of test examples for classification.
  - Enhanced Adversarial robustness by 40% using sample difficulty aware Adversarial training algorithm.
- Enhancing Attention mechanism in CNN via Transformers using Self-supervision** *Sept. 2023 - Nov. 2023*  
*Course project / Deep Learning-Theory and Practice / Supervised by. Prof. P.Balamurugan / IIT Bombay*
  - Used Self-supervision using Swin Transformer blocks to have attentive CNNs
  - Improved Top-1 accuracy by 2.8% on ImageNet100 dataset using Multi-scale aggregation.

## EXPERIENCE

- Tata Consultancy Services - Research and Innovation Labs** *May 2022 - Jul. 2022*  
*Research Intern* *Bengaluru, India (Remote)*
  - Worked on Large-scale Point Cloud Segmentation problem for Autonomous Driving Scenarios.
  - Improved the mIoU by 2.2% upon using Dynamic Subsampling in the SemanticKITTI dataset.
- Indian Institute of Science** *June 2019 - Aug 2019*  
*Summer Research Intern* *Bengaluru, India*
  - Worked on 3D surface reconstruction using ArUco markers for objects like Pot, Mask etc.
  - Achieved 7x better reconstruction using 1-marker erasure tolerant grids compared to erasure intolerant grid.

## KEY COURSES TAKEN

- Machine Learning, Deep Learning, Linear Algebra, Probability, Optimization.

## TECHNICAL SKILLS

- Programming Languages/Libraries/Framework:** C/C++, Python, SQL, Pytorch, Scikit-learn, Pandas, Numpy, Microsoft Azure

## POSITIONS OF RESPONSIBILITY

- Departmental Coordinator**, Institute Research Scholars Companion Programme, IIT Bombay *Aug 2024 - Present*
- Teaching Assistant**, Machine Learning(DS303), Data Science (DS203) at IIT Bombay *Feb 2024 - Present*
- Teaching Assistant**, Government College of Engineering and Leather Technology, Kolkata *Jan 2024 - Present*
- Organizing volunteer**, IndoML Conference, IIT Bombay *Dec 2023*
- Assistant Head Coordinator**, Training & Placement Cell, IIT Patna *May 2022 - May 2023*

## ACHIEVEMENTS

- Institute Silver Medal** Highest CPI in M.Tech. batch (2021-2023), CSE-department, IIT Patna. *May. 2024*
- All India Rank 45** Indian Statistical Institute Kolkata, Entrance test for M.Tech. *July. 2021*
- All India Rank 487** out of 1 lakh candidates in Graduate Aptitude Test in Engineering *Feb. 2021*