

Avigyan Bhattacharya

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EDUCATION

Carnegie Mellon University, Robotics Institute

Pittsburgh, PA

Master of Science in Robotics (Research), GPA: 4.22/4

August 2024 – May 2026

- Relevant Courses: Advance Computer Vision, Learning for 3D Vision, Deep Learning Systems, Multimodal ML

Jadavpur University

Kolkata, India

Bachelor of Engineering in Computer Science, GPA: 9.14/10

August 2019 – May 2023

- Relevant Courses: Deep Learning, Brain-Computer Interfacing, Computer Graphics, Graph Theory and Combinatorics

EXPERIENCE

Carnegie Mellon University

Pittsburgh, PA

Graduate Research Assistant at AirLab & TBDLab

November 2024 – Present

- Building a vision-language reasoning benchmark and method for autonomous systems to interpret diverse commands and resolve ambiguous goals through perception and commonsense grounding.
- Developed a semantic mapping framework for robots that fuses in-and-beyond depth-range observations, achieving SOTA zero-shot open-vocabulary 3D segmentation and 2.2× improved exploration efficiency. [[Website](#)]

Indian Institute of Technology Bombay

Mumbai, India

Research Fellow in AI at Centre for Machine Intelligence and Data Science

July 2023 – July 2024

- Developed a visual clue based prompt learning architecture for VLM to solve class and domain generalization and surpassed SOTA by 3-5% in accuracy across multiple remote sensing datasets.
- Built generative data augmentation frameworks to improve domain generalization and open-set robustness of supervised and self-supervised vision models across unseen domains.

TCS Research and Innovation Labs

Kolkata, India

Research Intern

May 2022 – August 2022

- Designed and deployed a pipeline to generate Scene Graphs and Knowledge Graphs from RGB-D images, enabling a system for handling robotics context and task feasibility. [[Paper](#)][[Patent](#)]

SELECT PUBLICATIONS (* denotes equal contribution)

RADSeg: Parameter and Compute Efficient Zero-Shot Open-Vocabulary Segmentation *IEEE CVPR Findings 2026*

Omar Alama*, Darshil Jariwala*, Avigyan Bhattacharya*, Seungchan Kim, Wenshan Wang, Sebastian Scherer

RayFronts: Open-Set Semantic Ray Frontiers for Online Scene Understanding and Exploration *IEEE IROS 2025*

Omar Alama, Avigyan Bhattacharya, Haoyang He, ..., Wenshan Wang, Cherie Ho, Nikhil Keetha, Sebastian Scherer

C-SAW: Self-supervised Prompt Learning for Image Generalization in Remote Sensing

ACM ICVGIP 2024

Avigyan Bhattacharya, Mainak Singha, Ankit Jha, Biplab Banerjee

PROJECTS

Scene Text Image Super Resolution

September 2022 – April 2023

- Integrated Dictionary Embedding based probabilistic priors into a Scene Text Image Super Resolution pipeline and obtained 3-4% higher accuracy for more challenging and lengthy words compared to existing approaches. [[Paper](#)]

Segmentation based Burnt Scars identification

June 2021 – January 2022

- Implemented DL models (FCN, UNet) to segment burnt-scars in Amazon rainforest pastures from a weakly labeled dataset. Applied human-in-the-loop approach for iterative label refinement, boosting performance.

Dataset for Vehicle Detection on Indian Roads

October 2020 – March 2021

- Curated an image dataset reflecting India's road conditions, congestion patterns, and vehicle types and benchmarked using deep learning models (Faster RCNN, YOLOv3, RFCN), achieving a mAP of 74.53%. [[Paper](#)]

SKILLS

Computer Vision, Multimodal Learning, Generative AI, Deep Learning

Languages & Frameworks: Python, C++, C, Pytorch, TensorFlow, SQL, Git, Unreal Engine