

Subhajit Maity

Doctoral Researcher | University of Central Florida

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Education

College of Engineering and Computer Science, University of Central Florida

Orlando, FL, USA

PhD. in Computer Science

Aug. 2024 - Present

- GPA: 4.0/4.0
- Advisor: Dr. Aritra Dutta
- Research Area: Self-Attention, Transformers, Large Multimodal Models

Jalpaiguri Government Engineering College (Autonomous) & Maulana Abul Kalam Azad University of Technology (Formerly, West Bengal University of Technology)

Jalpaiguri, India

BTech. in Electronics & Communication Engineering

Aug. 2014 - Jul. 2018

- GPA: 8.47/10
- Courses: Linear Algebra, Calculus, Artificial Intelligence
- Project: Infrared-based IOT for Domestic Consumer Grade Appliances

Experiences

University of Central Florida

Orlando, FL, USA

Graduate Research Assistant

Aug. 2024 - Present

Understanding the Transformers and Multi-Head Self-Attention.

- Projects: Fibottention, Kolmogorov-Arnold Attention, Video Action Recognition with LMMs.
- Supervisor: Dr. Aritra Dutta, Department of Mathematics, University of Central Florida

IDEAS, Technology Innovation Hub, Indian Statistical Institute, Kolkata

Kolkata, India

Associate Research Engineer

Jun. 2022 - Jul. 2023

Worked on Object Detection, Monocular Speed Estimation, License Plate Recognition, and Scene Text Recognition.

- Projects: Traffic Surveillance for Overspeeding Vehicles and License Plate Recognition
- Supervisor: Prof. Umapada Pal, CVPR Unit, Indian Statistical Institute, Kolkata

Tata Consultancy Services Limited

Kolkata, India

Systems Engineer

Nov. 2018 - Jan. 2021

Worked as Oracle FMW Administrator, Oracle SSO Security Administrator, Oracle FMW Developer, Oracle Cloud Administrator, Linux administrator.

- Projects: OCI Migration, Oracle SSO (OAM & IAM) Administration/Setup, Oracle FMW (SOA & OSB) Development, Oracle FMW Administration, Oracle FMW Migration 11g to 12c, Linux Server Administration
- Technologies: Oracle OAM, Oracle IAM, Oracle FMW, Oracle SOA, Oracle OSB, Oracle OCI-C, Oracle OCI, Oracle Linux

National Institute of Technology, Silchar

Silchar, India

Research Intern

Jun. 2017 - Jul. 2017

Worked on Image Processing, Natural Language Processing, Bayesian classifier, and Image Caption Generation.

- Project: Word Sense Disambiguation for Ambiguous Words using Visual Supervision
- Supervisor: Dr. Koushik Guha, Dept. of ECE, National Institute of Technology, Silchar

Technical Skills

Programming

Python (PyTorch, Numpy, Matplotlib, Pandas, Keras, Tensorflow), Matlab, Java

Documentation & Typesetting

LaTeX, Beamer, Microsoft Office

Publications & Preprints

- [1] S. Maity, A. K. Bhunia, S. Koley, P. N. Chowdhury, A. Sain, Y. Z. Song. "Doodle Your Keypoints: Sketch-Based Few-Shot Keypoint Detection," *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2025. [Paper] [Project Page]
- [2] A. Sain, S. Maity, P. N. Chowdhury, S. Koley, A. K. Bhunia, Y. Z. Song. "Sketch Down the FLOPs: Towards Efficient Networks for Human Sketch," *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025. [Paper] [Project Page]

[3]

S. Maity, K. Hitsman, X. Li, A. Dutta. “Kolmogorov-Arnold Attention: Is Learnable Attention Better For Vision Transformers?,” *arXiv preprint arXiv:2503.10632*, 2024. [Paper] [Project Page]

[4]

A. K. Rahimian, M. K. Govind, S. Maity, D. Reilly, C. Kümmerle, S. Das, A. Dutta. “Fibottention: Inceptive Visual Representation Learning with Diverse Attention Across Heads,” *arXiv preprint arXiv:2406.19391*, 2024. [Paper]

[5]

J. Van Landeghem, S. Maity, A. Banerjee, M. Blaschko, M. F. Moens, J. Lladós, S. Biswas. “DistilDoc: Knowledge Distillation for Visually-Rich Document Applications,” *International Conference on Document Analysis and Recognition (ICDAR)*, 2024. [Paper]

[6]

S. Maity, S. Biswas, S. Manna, A. Banerjee, J. Lladós, S. Bhattacharya, U. Pal. “SelfDocSeg: A Self-Supervised vision-based Approach towards Document Segmentation,” *International Conference on Document Analysis and Recognition (ICDAR)*, 2023. (Oral) [Paper] [Project Page]

[7]

S. Maity, R. K. Karsh. “Image Hash Minimization for Tamper Detection,” *International Conference on Advances in Pattern Recognition (ICAPR)*, 2017. [Paper] [Project Page]

Research Projects

<div> <div>Synthetic Data Generation</div> <div> <div>Explored the scope and future of synthetic data for vision tasks to explain their successes or failures for the understanding of effective training data generation and dataset condensation.</div> <div> <div> <div>• Collaborator: Rakesh Dey, CVPR Unit, Indian Statistical Institute, Kolkata</div> </div> </div> </div> </div>	<div> <div>Kolkata, India</div> <div>Sep. 2023 - Jul. 2024</div> </div>
<div> <div>Sketch-guided Generation using StyleGAN</div> <div> <div>Investigated the influence of sparse line drawings, sketches, and edge maps for facial image manipulation, in-painting, completion with StyleGAN.</div> <div> <div>• Collaborator: Rakesh Dey, CVPR Unit, Indian Statistical Institute, Kolkata</div> </div> </div> </div>	<div> <div>Kolkata, India</div> <div>Aug. 2023 - Dec. 2023</div> </div>
<div> <div>Clouded Leopard Reidentification</div> <div> <div>An application-based project to explore the scope of individual-level identification, monitoring, and tracking of clouded leopards in protected forests in India.</div> <div> <div>• Collaborators: Dr. Tanoy Mukherjee & Prof. Joydev Chattopadhyay, AER Unit, Indian Statistical Institute, Kolkata, Mr. Debal Ray, PCCF, Directorate of Forests, The Government of West Bengal, India</div> </div> </div> </div>	<div> <div>Kolkata, India</div> <div>Aug. 2023 - Aug. 2024</div> </div>
<div> <div>Self-Supervised Object Detection</div> <div> <div>Explored self-supervised learning strategies and non-contrastive object-aware self-supervision for object detection and the benchmark and the scope of end-to-end self-supervision for object detection.</div> <div> <div>• Supervisor: Prof. Umapada Pal, CVPR Unit, Indian Statistical Institute, Kolkata, Prof. Saumik Bhattacharya, Dept. of Electronics and Electrical Communication Engineering, Indian Institute of Technology, Kharagpur</div> </div> </div> </div>	<div> <div>Kolkata, India</div> <div>Aug. 2022 - Mar. 2023</div> </div>

Extracurricular

Sep. 2023	<div> <div>Consultancy:</div> <div>Invited as consultant for Clouded Leopard Identification at the Office of the Directorate of Forests, The Government of West Bengal for preliminary strategic review and planning for practical implementation at Buxa Tiger Reserve, India.</div> </div>	<div> <div>Kolkata, India</div> </div>
Mar. 2023	<div> <div>Representation & Participation:</div> <div>Invited to attend “G20 Expo, 2nd Education Working Group Meeting, G20 Summit 2023” to represent IDEAS - Technology Innovation Hub, Indian Statistical Institute, Kolkata.</div> </div>	<div> <div>Amritsar, India</div> </div>
2017, 2018	<div> <div>Scholarship:</div> <div>Received the “Full Fee Scholarship for Excellent Academic Records” for two consecutive years during the junior and senior years of my undergraduate degree.</div> </div>	<div> <div>Jalpaiguri, India</div> </div>
2015, 2016	<div> <div>Scholarship:</div> <div>Received the “Half Fee Scholarship for Excellent Academic Records” for two consecutive years during the freshman and sophomore years of my undergraduate degree.</div> </div>	<div> <div>Jalpaiguri, India</div> </div>