Aritra Bhowmik

ATLAS lab
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Education

2024 Oct – Present **Research Intern**, *KAUST*, Saudi Arabia.
Topic: Multi-modal masked modeling

2021 – Present **Phd in Computer Vision**, *University of Amsterdam*, Netherlands.
Topic: Feature representation via scene understanding for object detection

2015–2018 **M.E. in System Science and Automation**, *Indian Institute of Science*, Bangalore, Karnatka.
Thesis: Deep Neural Networks for Image Deconvolution and Super-Resolution
Received 'S' (highest grade) in Master's thesis.

2011–2015 **B.E. in Electrical Engineering**, *Jadavpur University*, Kolkata, West Bengal.

Experience

2020, Jan - Aug **Internship in the HCI lab**, *University of Heidelberg*, Germany.
Topic: Improving Class-Distribution Learning with Invertible Neural Networks

2018–2019 **Research associate in Computer graphics and visualization lab**, *TU Dresden*, Germany.
Topic: Detection and description of 2D feature points for image matching

2018–2019 **Computer vision expert**, *FSD Gmbh*, Germany.
Topic: Building a platform for testing self-driving car algorithms.

Awards and Honors

2015 **All India Rank 5** in **GATE–2015** Electrical Engineering

2010 **Regional Mathematical Olympiad, 2010** and appeared in the Indian National Mathematical Olympiad(INMO).

Publications

under Review **Structured-Noise Masked Modeling for Video, Audio and Beyond**.
Aritra bhowmik, Fida Mohammad Thoker, Carlos Hinojosa, Bernard Ghanem, Cees G. M. Snoek
Mask sampling from a color-noise improves feature representation in videos and audios.

under Review **TWIST & SCOUT: Grounding Multimodal LLM-Experts by Forget-Free Tuning**.
Aritra bhowmik, Mohammad Mahdi Derakshani, Martin R. Oswald, Yuki M Asano, Cees G. M. Snoek
Incorporating grounding capabilities in visual language models.

ICLR Spotlight **Union-over-Intersections: Object Detection beyond Winner-Takes-All**.
Aritra bhowmik, Martin R. Oswald, Pascal Mettes, Cees G. M. Snoek
Rethinking bounding box regression objective via intersection learning for object detection and instance segmentation.
Link: `https://arxiv.org/abs/2311.18512`

ICCV **Detecting Objects with Context-Likelihood Graphs and Graph Refinement**.
Aritra bhowmik, Yu Wang, Nora Baka, Martin R. Oswald, Cees G. M. Snoek
Learning object-relation joint distribution via energy model for object detection
Link: `https://arxiv.org/abs/2212.12395`

ACM Multimedia **ArtiVisual: A Platform to Generate and Compare Art**.
Jardenna Mohazzab, Abe Vos, Jonathan van Westendorp, Lucas Lageweg, Dylan Prins, Aritra Bhowmik
ArtiVisual: A platform for generating art-pieces based on existing styles and visualizing commonalities between artworks using generative networks and interactive visualizations.
Link: `https://dl.acm.org/doi/abs/10.1145/3474085.3478565`

CVPR Oral **Reinforced Feature Points: Optimizing Feature Detection and Description for a High-Level Task**.
A Bhowmik, S Gumhold, C Rother, E Brachmann
End-to-end pipeline for image matching using 2D feature points
Oral Presentation
Link: `https://arxiv.org/abs/1912.00623`

NIPS **Bayesian Deep Deconvolutional Neural Networks**.
A Bhowmik, A Adiga, C Seelamantula, F Hauser, J Jacak, B Heise
Denoising dSTORM microscopy images
Bayesian Learning Workshop
Link: `http://bayesiandeeplearning.org/2017/papers/46.pdf`

IEEE SP Letters **Training-free, single-image super-resolution using a dynamic convolutional network**.
Aritra Bhowmik, Suprosanna Shit, Chandra Sekhar Seelamantula
Performs super resolution on a single image without requiring any training data
Link: `https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8038812`

Professional Activity

Presentation Oral Presentation in CVPR, Spotlight presentation in ICLR

Reviewer ICCV, CVPR, Neurips, ECCV, ICLR