

Amartya Dutta

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[Personal Website](#)

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[GitHub](#)

EDUCATION

Virginia Tech, Blacksburg, USA

PhD, Computer Science

March 2025 - Present

Master of Science, Computer Science; GPA: 3.9/4

Aug 2022 - Feb 2025

Indian Institute of Information Technology (IIIT) Guwahati, India

Bachelor of Technology, Computer Science and Engineering; GPA: 8.6/10

July 2017 - May 2021

WORK EXPERIENCE

Graduate Research Assistant, COMPASS Centre

May 2025 – Present

- Working on building foundation models for drug repurposing.

Graduate Research Assistant, Virginia Tech

Aug 2022 – Dec 2024

- Developed a **novel zero-shot approach** for **Scene Graph Relationship Prediction** using **VLMs**, reframing Predicate Classification as an **MCQA task** and surpassing trained baselines by at least 7% for **balanced relationship prediction**. Designed an **open-ended relationship generation framework** to eliminate answer-choice biases and improve contextual understanding.
- Performed comparative analysis of **Weakly Supervised Semantic Segmentation** approaches, highlighting the superiority of saliency maps over CAMs and introducing stochastic aggregation to enhance saliency effectiveness.

Augmented Reality Developer Intern, Amply

Dec 2019 - Mar 2020

- Developed interactive Augmented Reality (AR) portals using AR-Core in Unity3D, enabling secure interactions with virtual objects to create immersive AR tours for client companies

Virtual Reality Developer Intern, IIT Guwahati

May 2019 - Jul 2019

- Designed and developed an interactive Virtual Reality (VR) tour using Unity3D, focusing on smooth navigation within the virtual environment to enhance user experience (UX) in VR.

PUBLICATIONS

[P1] **Dutta, A.**, Mehrab KS., Sawhney M, Neog, A. A., Karpatne, A. et al.(2025). "Open World Scene Graph Generation using Vision Language Models" CVPR 2025 Workshop, Computer Vision in the Wild and ICML 2025 Workshop Assessing World Models. [Paper](#)

[P2] Maruf, M., Daw, A., **Dutta, A.**, Bu, J., Karpatne, A. (2023). "Beyond Discriminative Regions: Saliency Maps as Alternatives to CAMs." arXiv. Under Review [Paper](#)

[P3] **Dutta, A.**, Nath, K. (2022). "Learning via LSTM for Railway Bridge strains." ICDSMLA 2020. [Paper](#)

[P4] **Dutta, A.**, Bhattacharjee, R.K., Barbhuiya, F.A. (2021). "Efficient Detection of Lesions During Endoscopy." ICPR 2021. [Paper](#)

[P5] **Dutta, A.**, Barbhuiya, F.A. (2021). "Predicting Popularity of Images Over 30 Days." arXiv.[Paper](#)

PROJECTS

SEAL-0 (Search Engine Augmented Language) (Ongoing): Creating a dataset of complex questions that challenge state-of-the-art LLMs. This project evaluates how these models handle queries requiring up-to-date knowledge and complex reasoning by leveraging search engines for real-time information.

Evaluating Model Reasoning and Hallucinations in Medical LLMs: This project investigates factual error propagation in open-source medical LLMs (e.g., BioMistral, Asclepius) and documents their datasets for transparency. By highlighting performance variations, it aims to guide the development of safer, more reliable language models for healthcare. [GitHub](#)

Visualizing the Spotify Soundscape: This project visualizes the Spotify Top 50 Tracks of 2023 through an interactive, HTML-based dashboard. Using D3.js and Plotly.js, it enables dynamic, data-driven exploration of each track's popularity and attributes. [GitHub](#)

Predicting Popularity of Flickr Images (ICIP 2021): This project predicts how popular a Flickr image will be over 30 days, even before it's uploaded. By analyzing user and image social features alongside image visuals, it models engagement based on two factors: scale and shape. Using these factors, the method forecasts the daily engagement sequence. See publication [P4]. [GitHub](#)

TEACHING EXPERIENCE

CS 2064: Intermediate Programming in Python: Graduate Teaching Assistant, Virginia Tech.

CS 5644: Machine Learning with Big Data: : Graduate Teaching Assistant, Virginia Tech.

CS 5805: Machine Learning: : Graduate Teaching Assistant, Virginia Tech.

ACADEMIC SERVICES & AWARDS

Reviewer: AAAI-24-Imageomics-Workshop

Reviewer: CVPR 2025 Workshop, Computer Vision in the Wild (CVinW)

Program Committee: CVPR 2025 Workshop, CVinW

3rd Position, IEEE ICIP Image Popularity Prediction Challenge (Oct 2020): [View Results](#)

SKILLS SUMMARY

Languages: Python, L^AT_EX, C++, Shell

Frameworks/Tools: PyTorch, TensorFlow, Keras, Scikit, OpenCV, Numpy, Pandas, Git, Unity3D, vLLM, LangChain, FAISS, OpenAI API, Hugging Face Transformers & APIs