

SOUMYAJIT KARMAKAR

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 [soumyajitkarmakar.github.io](https://github.com/soumyajitkarmakar) •  Scholar

EDUCATION

- University of California San Diego** 2024 - 2026
Master of Science in Computer Science and Engineering.
Thesis Advisor: [Prof. Mikhail Belkin](#).
GPA: 4.0/4.0
- Indian Institute of Information Technology, Guwahati** 2019 - 2023
Bachelor of Technology in Computer Science and Engineering.
CGPA: 9.35/10.00 (Silver medalist)

RESEARCH EXPERIENCE

- University of California San Diego**
Graduate Research Assistant
Advisor: [Prof. Mikhail Belkin](#) September 2024 - Present
- Investigating internal activation geometry of Large Language Models (LLMs) using Recursive Feature Machines (RFM).
 - Analyzing the structure of learned representations to find universal linear transformations (e.g., antonym relations) between concept vectors.
- Indian Institute of Science, Bengaluru**
Vision and AI Lab (VAL)
Project Assistant - Advisor : [Prof. R. Venkatesh Babu](#) September 2023 - August 2024
- Designed a prompt-based inference mechanism using CLIP for robust person re-identification, eliminating the need for extensive fine-tuning.
- International Institute of Information Technology, Hyderabad**
Center for Visual Information Technology (CVIT)
Research Fellow - Advisor : [Prof. C. V. Jawahar](#) January 2023 - August 2023
- Worked on developing Diffusion Models for semantic segmentation in the urban road settings.
- University of North Carolina at Charlotte, North Carolina**
Research Intern - Advisor : [Dr. Srijan Das](#) and [Dr. Michael S. Ryoo](#) August 2022 - March 2023
- Enhanced Vision Transformer (ViT) generalization on small datasets by integrating Masked Autoencoders (MAE) as a self-supervised auxiliary task.

ACHIEVEMENTS

- Global Rank 1**, in the Parameterized Algorithms and Computational Experiments (PACE) 2022 (Heuristic Track). [Link](#) for the paper. [Link](#) for the solver.

PUBLICATIONS

- Soumyajit Karmakar***, Shrinivas Ramasubramanian*, Harsh Rangwani*, Yasuhiro Aoki, Genta Suzuki, Venkatesh Babu. "Prompt-ReID: Prompt Based Inference for Robust Re-Identification". (*Pre-print*)
- Srijan Das, Tanmay Jain, Dominick Reilly, Pranav Balaji, **Soumyajit Karmakar**, Shyam Marjit, Xiang Li, Abhijit Das, Michael Ryoo. "Limited Data, Unlimited Potential: A Study on ViTs Augmented by Masked Autoencoders". In Proceedings of the 2024 IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**) 2024, Waikoloa, Hawaii, USA.
- Soumyajit Karmakar**, Abeer Banerjee, Prashant Sadashiv Gidde, Sumeet Saurav, Sanjay Singh. "Convolutional Ensembling based Few-Shot Defect Detection Technique". In Proceedings of the 2022 Indian Conference on Computer Vision, Graphics and Image Processing (**ICVGIP**), IIT Gandhinagar, India.
- Aman Jain, Sachin Agarwal, Nimish Agrawal, **Soumyajit Karmakar**, Srinibas Swain. "Feedback vertex set using Edge Density and REmove Redundant (FEDRER): A heuristic solver for finding a feedback vertex set in a directed graph" . In poster session of the 2022 International Symposium on Parameterized and Exact Computation (**IPEC**), Potsdam, Germany.

Technical Skills: Python, PyTorch, JAX, C++, LaTeX, Git.