
EDUCATION

- Indian Institute of Information Technology, Guwahati** 2019 - 2023
Bachelor of Technology in Computer Science and Engineering. CGPA: 9.35/10.00
Rank 2 / 222 in the institute.
- Birla School Pilani, India** 2019
12th standard, CBSE. PCM Score: 95%.

OBJECTIVE

Recent graduate passionate about Deep Learning and its application in the domain of Computer Vision, with 3 research papers at top conferences. Looking to pursue higher studies.

RESEARCH EXPERIENCE

- Indian Institute of Science, Bengaluru**
Vision and AI Lab (VAL)
Project Assistant - Advisor : **Prof. R. Venkatesh Babu** September 2023 - Present (3 months)
 - Working on developing an improved hard negative mining strategy for Contrastive-Loss based vision and language models, such as, CLIP.
- International Institute of Information Technology, Hyderabad**
Center for Visual Information Technology (CVIT)
Bachelor's thesis - Advisor : **Dr. C. V. Jawahar** January 2023 - April 2023 (4 months)
Research Fellow - Advisor : **Dr. C. V. Jawahar** May 2023 - August 2023 (4 months)
 - Member of the Mobility team, with the goal to use AI for improving road safety and autonomous driving.
 - Worked on a project developing Diffusion Models for various downstream tasks such as semantic segmentation especially for the urban road settings.
- University of North Carolina at Charlotte, North Carolina (Online)**
Research Intern - Advisor : **Dr. Srijan Das** and **Dr. Michael S. Ryoo** August 2022 - March 2023 (8 months)
 - Developed a joint training framework using a Self-Supervised Auxiliary Task (SSAT) to enhance the performance of ViTs on small datasets.
- CSIR-CEERI Pilani, Rajasthan**
Advanced Information Technologies Group (AITG)
Research Intern - Advisor : **Dr. Sanjay Singh** May 2022 - July 2022 (3 months)
 - Developed a novel few-shot learning framework, using a Convolution based ensembling technique, for anomaly detection.

ACHIEVEMENTS

- Secured **Global Rank 1**, student category (overall **Global Rank 5**), in the Heuristic Track in the Parameterized Algorithms and Computational Experiments (PACE) 2022, a worldwide algorithmic competition. In the Exact Track we secured **Global Rank 10**.

PUBLICATIONS

- 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** and 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.

PROJECTS AND OTHER WORKS

- Contributed to open source project **CompilerGym**. CompilerGym is a open source library of reinforcement learning environments for compiler tasks maintained by Facebook Research.
- **A study on Directed Feedback Vertex Set Problem**, a project under supervision of Dr. Srinibas Swain, CSE Assistant Professor at IIT Guwahati.
Objective: To analyse and implement the current state of the art algorithm on the problem of Directed Feedback Vertex Set.
- Developed a working model for Human Action Recognition with State of the Art performance under the supervision of Dr. Sanjay Singh during the winter break of 2021.
- Served as reviewer for the ICVGIP 2022, IIT Gandhinagar, conference.

RELEVANT COURSES AND EXAMS

- **Computer Science:** Artificial Intelligence, Machine Learning, Deep Learning, Analysis and Design of Algorithms, Data Structures, Programming Languages, Data Communication, Digital Hardware Design, Computer Architecture.
Online Course- Deep Learning Specialization by Prof. Andrew Ng (On Coursera).
- **Mathematics:** Graph Theory, Discrete Mathematics, Statistical Methods and Algorithms, Probability Theory, Real Analysis, Differential Equations, Linear Algebra, Multi-variable Calculus.
- **Standardized Exam:** 331/340 in GRE (162 Verbal Reasoning, 169 in Quantitative Reasoning).
112/120 in TOEFL.

TECHNICAL SKILLS

- **Programming Languages:** Python, C++.
- **Frameworks:** PyTorch, TensorFlow.