

Aniket Agarwal

APPLIED MATHEMATICS UNDERGRADUATE · INDIAN INSTITUTE OF TECHNOLOGY ROORKEE, INDIA

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Education

Indian Institute of Technology Roorkee

INTEGRATED MSc APPLIED MATHEMATICS

- Cumulative Grade Point, CGPA: 7.71/10

Roorkee, India

July 2017-Present

Maharaja Agrasen Model School

HIGH SCHOOL | PCM (ALONG WITH COMPUTER SCIENCE)

- Percentage: 94.8%

New Delhi, India

March 2015-March 2017

Publications

Exploring Long Tail Visual Relationship Recognition with Large Vocabulary

ANIKET AGARWAL*, SHERIF ABDELKARIM*, PANOS ACHLIOPTAS, JUN CHEN, JIAJI HUANG, BOYANG LI, KENNETH CHURCH, MOHAMED ELHOSEINY

ICCV 2021

[Paper Link](#)

RelTransformer: Balancing the Visual Relationship Detection from Local Context, Scene and Memory

JUN CHEN, ANIKET AGARWAL, SHERIF ABDELKARIM, DEYAO ZHU, MOHAMED ELHOSEINY

In Review for CVPR 2022

[Paper Link](#)

Visual Relationship Detection using Scene Graphs: A Survey

ANIKET AGARWAL*, AYUSH MANGAL*, VIPUL*

Survey paper

[Paper Link](#)

Revisiting CycleGAN for semi-supervised segmentation

ARNAB MONDAL, ANIKET AGARWAL, JOSE DOLZ, CHRISTIAN DESROSIER

Arxiv Preprint

[Paper Link](#)

Research Experience

Bachelor thesis project, IIT Roorkee

THESIS PROJECT | PROF SANJEEV KUMAR

- Working on the problem of Data-driven simulation using implicit neural representations.
- Tested various baseline models such as DataDreamer, GANCraft for the task.
- Implementing a NeRF based pipeline, taking inspiration from ObjectFolder paper to encode physical properties of objects alongside their visual features.

Roorkee, India

Sep 2021 - Present

Princeton NLP group

RESEARCH INTERNSHIP | PROF KARTHIK NARASIMHAN

- Working on Long-Horizon Video Understanding, where we are specifically proposing a new dataset consisting of cricket matches with their corresponding natural language commentary.
- The dataset focuses on longer video lengths, upwards of 2 hrs, and contains varied global tasks involved in the sport.
- Involved in the annotation process and also developing specific set of tasks such as NLVL, VQA, etc specifically suited for the dataset.

New Jersey, USA

Oct 2021 - Present

NUS CVML group

RESEARCH INTERNSHIP | PROF ANGELA YAO

- Worked on the task of egocentric hand action recognition, where we propose an egocentric hand actions dataset with three states, 'pre-action', 'action' & 'post-action', labelled.
- The labeling of three states enabled us to propose new tasks such as state modification recognition along with vanilla action recognition.
- Developed the annotation pipeline, and benchmarked the dataset on various baselines like MSG3D, ST-GCN, H+O unified pose estimation, etc.

Singapore

Jun 2021 - Nov 2021

CAIR group, KAUST

RESEARCH INTERNSHIP | PROF MOHAMED ELHOSEINY

Saudi Arabia

May 2020 - Mar 2021

- Proposed two new benchmarks, GQA-LT & VG8K-LT, for solving the problem of long-tail detection in Visual Relationship Recognition(VRR) task.
- Implemented various baselines for the proposed benchmark. Also proposed two novel techniques, RelMix and VilHub, which can be used to improve on tail accuracy for a VRR model.
- A paper for the same is accepted at ICCV 2021. [\[Project Page\]](#)
- Organized a challenge using our proposed benchmark in the ICCV 2021 CLVL workshop. [\[Challenge Page\]](#)
- Proposed another method for rectifying the long-tail VRR task using a novel RelTransformer architecture along with a memory module. Tested the approach on various baselines and was able to improve upon almost all the models by approx 20% on tail classes.
- A paper for this work is currently under review for CVPR 2022. [\[Arxiv Link\]](#)

LIVIA group, ETS Montreal

RESEACH INTERNSHIP | PROF CHRISTIAN DESROSIER | PROF JOSE DOLZ

Montreal, Canada

May 2019 - July 2019

- Worked on the problem of semi-supervised medical image segmentation
- Developed a new architecture for solving the same inspired by the CycleGAN architecture and tested it on various datasets like VOC, Cityspaces and ACDC. The model was able to improve the previous SOTA models by 2-4% on the said datasets. [\[Arxiv Link\]](#) [\[GitHub Link\]](#).

Projects

vGraph: A Generative model for joint community detection and node representational learning

Roorkee, India

UNDER NEURIPS REPRODUCIBILITY CHALLENGE 2019

October 2019 - November 2019

- Implemented the paper along with reproducing the experiments and baselines reported in the paper under the reproducibility challenge. [\[Github Link\]](#)

Papers We Read

Roorkee, India

UNDER VISION AND LANGUAGE GROUP

September 2019 - Jan 2020

- Core Contributor to the repo containing summaries of the various CV/NLP papers accepted in top conferences, that are discussed in VLG. [\[Github Link\]](#)

LeDoc

Roorkee, India

SELECTED FOR INTER IIT TECH MEET, 2018 HELD IN IIT BOMBAY

December 2018

- This is a project aimed to assist doctors in preliminary stages of Medical Image Analysis.
- The main purpose of the app is to segment out the affected region and also determine the severity of the disease. [\[Github Link\]](#)

Research project on medical image segmentation

Roorkee, India

UNDER THE SUPERVISION OF PROF R. BALASUBRAMANIAN, PROFESSOR, COMPUTER SCIENCE DEPARTMENT, IIT ROORKEE

August 2018 - Nov 2019

- Used clustering algorithms to segment out the affected region in the case of skin cancer and brain stroke.
- To further improve the results, various evolutionary algorithms like Genetic Algorithms, Particle Swarm Optimization and Whale Optimization were used along with usage of certain encryption techniques to maintain user privacy.

Achievements & Scholarships

2018	Participation , Inter IIT Tech Meet in Engineer's Conclave Event	Mumbai, India
2018	Scholarship , Inspire Scholarship Fellow under the Ministry of Science and Technology	Roorkee, India
2018	All India Rank 49 , In Amex Analyze This 2018(among the 800 participated teams)	Roorkee, India
2018	Dedicated Member Award , Awarded Dedicated member award by NSS, IIT Roorkee for my excellent work	Roorkee, India
2017	All India Rank 4605 , Joint Entrance Exam(Advanced); 200,000 candidates	India
2017	All India Rank 3751 , Joint Entrance Exam(Mains); 1,000,000 candidates	India

Extracurricular Activity

Vision and Language Group

Roorkee, India

CO-PRESIDENT

Oct 2018-PRESENT

- An open paper-discussion group on recent papers accepted in various ML/CV/NLP related conferences. [\[Link\]](#)
- Involved in overall planning of the group, including organizing and moderating paper discussions, contributing to projects, etc.

ACM IIT Roorkee Chapter

Roorkee, India

TREASURER

April 2019-PRESENT

- Served as the Treasurer for ACM IIT Roorkee Chapter, and was involved in conducting discussions pertaining to core-CS topics like Systems, Networking, etc. [\[Link\]](#)

Academic Reinforcement Programme

UGTA MEMBER

- Served as a Teaching Assistant for MAN-001 course taught to the freshmen batch.

Roorkee, India

Aug 2018-Nov 2018

NSS IIT ROORKEE

EDITORIAL TEAM MEMBER

- Organized various events like Swachh Bharat Abhiyaan, Cloth distribution drives and encouraged people towards the advantages of the same.

Roorkee, India

Aug 2017-May 2018

References

Prof Mohamed Elhoseiny

ASSISTANT PROFESSOR, KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY(KAUST), SAUDI ARABIA

- **Email:** mohamed.elhoseiny@kaust.edu.sa

Saudi Arabia

Prof Christian Desrosiers

PROFESSOR, ÉCOLE DE TECHNOLOGIE SUPÉRIEURE(ETS), MONTREAL

- **Email:** christian.desrosiers@etsmtl.ca

Montreal, Canada

Prof Angela Yao

ASSISTANT PROFESSOR, NATIONAL UNIVERSITY OF SINGAPORE(NUS)

- **Email:** ayao@comp.nus.edu.sg

Singapore

Prof Sanjeev Kumar

ASSOCIATE PROFESSOR, DEPT. OF MATHEMATICS, IIT ROORKEE

- **Email:** malikfma@iitr.ac.in

Roorkee, India