# AAYAN YADAV

✉ ydvaayan@gmail.com   Google Scholar   in linkedin.com/in/aayanyadav09   github.com/ydvaayan   Portfolio

## Education

*\*GPA conversion to 4.0 scale done according to this website: https://gpa.eng.uci.edu/node/158*

**Indian Institute of Technology, Roorkee**      **Oct. 2022 – May 2026**
*Bachelor of Technology in Data Science and Artificial Intelligence*      *Uttarakhand, India*
CGPA : 8.952/10.0 ($\sim$ 3.73/4.0)*

## Experience

**AuraML** | *Research Intern (Hybrid)*      **April 2025 - August 2025**
- Developed a scalable pipeline combining VLMs and graph diffusion models to generate and edit large 3D warehouse scenes from text prompts with efficiency and accuracy.

**Zellic** | *Research Intern (Remote)*      **July 2024 - February 2025**
- Built a classifier for detecting AI generated images. Improved upon SoTA classifier by finetuning contrastive language-image based encoder. Also experimented with some few shot techniques and adversarial training.

**University of Michigan** | *Research Collaboration (Remote)*      **September 2023 - March 2024**
- Worked on refining instance segmentation masks of MS-COCO dataset and analysed its impact by training and benchmarking models. I also wrote and presented a full paper accepted at ECCV 2024 with my amazing coauthors.

## Publications

*⚹ denotes equal contribution.*

**Benchmarking Object Detectors with COCO: A New Path Forward** [Website][Preprint][GitHub]
*Shweta Singh[⚹], **Aayan Yadav**[⚹], Jitesh Jain, Humphrey Shi, Justin Johnson, Karan Desai*      **ECCV 2024**
- Created refined annotations for the COCO-2017 dataset to mitigate imperfections by leveraging the Segment Anything model and LVIS dataset in a semi-automatic pipeline. Benchmarked object detectors to validate annotations.

**StegaVision: Enhancing Steganography with Attention Mechanism (Student Abstract)** [Preprint][GitHub]
*Abhinav Kumar, Pratham Singla, **Aayan Yadav***      **AAAI 2025**
- Explored the impact of various attention mechanism i.e. channel and spatial and their permutations on encoder-decoder architecture for steganograpy.

**Provenance Detection for AI-Generated Images: Combining Perceptual Hashing, Homomor- -phic Encryption, and AI Detection Models** [Preprint][GitHub]      **Under Review**
*Shree Singhi[⚹], **Aayan Yadav**[⚹], Aayush Gupta, Shahriar Ebrahimi, Parisa Hassanizadeh*
- A content provenance system to detect AI generated images. I worked on training adversially robust binary classfier for the task. I leveraged embedding space of large self supervised vision-language models.

## Projects

**SLAFCoM: A Study on Loss Functions for Adversarial Finetuning of Contrastive Models** [GitHub] **April 2025**
- Introduced a Clean Consistency Term in the loss function and experimented to improve adversarial finetuning.

**Sirius** | *Pathway, OpenAI Swarm* [GitHub]      **November 2024**
- Build an agentic RAG system using SoTA techniques like AdaRAG, PlanRAG, HyDE, SPLADE, MetRAG, RRF etc.

## Achievements

**All India Rank 1353, JEE Advanced 2022** *150k+ students in India take this for admission in IITs.*
**All India Rank 1962, JEE Main 2022** *1M+ students in India take this for JEE Advanced eligibility.*
**All India Rank 993, KVPY(SX) 2022** *Prestigious national fellowship for students with high research aptitude.*
**All India Rank 84, WBJEE 2022** *150k+ Indian students take this for admission to colleges in West Bengal.*
**NTSE Scholarship Awardee, 2021** *NTSE is a national-level examination for the secondary school level to identify and recognize students with high intellect and skills.*

## Extracurricular

**Vision and Language Group, IIT Roorkee** | *Co-President*      **March 2023 – Present**
*Deep learning group on campus that organizes open discussions and projects related to deep learning.*[Website]
**Data Science Group, IIT Roorkee** | *Joint Seceretary*      **April 2023 – Present**
*Data Science and Machine Learning Group on campus that organizes workshops, talks and projects.*[Website]

## References

**Prof. Justin Johnson** | *Email: justincj@umich.edu*      **United States**
*Assistant Professor at University of Michigan | Co-founder at World Labs*
**Dr Karan Desai** | *Email: kdexd@umich.edu*      **United States**
*Ph.D. in CSE at Universtiy of Michigan | Member of Technical Staff at World Labs*
**Prof. Sanjeev Kumar** | *Email: sanjeev.kumar@ma.iitr.ac.in*      **India**
*HOD of Mehta Family School of Data Science and Artificial Intelligence, IIT Roorkee*
**Arjun Gupta** | *Email: cto@auraml.com*      **India**
*Co Founder & CTO at AuraML*