

Rahul Vigneswaran

Masters in Computer Science & Engineering (By Research)

Indian Institute of Technology Hyderabad

Reliance Foundation Fellow

Advisor: *Dr Vineeth N Balasubramanian*

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✉ cs23mtech02002@iith.ac.in

🏠 [rahulvigneswaran.github.io](https://github.com/rahulvigneswaran)

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EDUCATION

Indian Institute of Technology, Hyderabad

India

Master of Technology in Computer Science & Engineering (By Research) - CGPA: (9.6/10)

Jan'23 - Dec'25

PUBLICATIONS

- **CVPR 2025** | Under Review |
Rahul Vigneswaran, Hari Chandana Kuchibhotla, Vineeth N Balasubramanian.
Tackling Long-Tailed Class Incremental Learning.
- **TMLR 2024/25** | Accepted |
Rahul Vigneswaran*, Kancheti Sai Srinivas*, Bamdev Mishra, Vineeth N Balasubramanian.
HARE: Human-in-the-Loop Algorithmic Recourse.
- **ICVGIP 2021** | [Paper](#) | [Code](#) | [Video](#) |
Rahul Vigneswaran, Marc T Law, Vineeth N Balasubramanian, Makarand Tapaswi.
Feature Generation for Long-tailed Classification.
- **AAAI 2021** | [Paper](#) |
Adepu Ravi Shankar*, Yash Khasbage*, **Rahul Vigneswaran**, Vineeth N Balasubramanian.
A Deeper Look at the Hessian Eigen Spectrum of Deep Neural Networks and its Applications to Regularization.

RESEARCH EXPERIENCE

Research Assistant

IIT Hyderabad, India

Advisor: *Dr Vineeth NB*

Jan'23 - Present

- Developed a novel method to tackle Transitioning Head problem in Long-Tailed Class Incremental Learning via Early Knowledge Transfer, achieving state-of-the-art results.
- Created a human-in-the-loop recourse framework that integrates user feedback, generating personalized counterfactuals and enhancing user satisfaction and transparency.
- ★ One work under review at **CVPR'25** and one accepted at **TMLR'24/25**.

Research Intern

IIT Hyderabad, India

Advisors: *Dr Vineeth NB (IIT-H) & Dr Makarand Tapaswi (IIIT-H)*

July'19 - Jan'23

- Developed TailCalibX, a feature generation technique for Long-Tailed classification that uses calibrated distributions to boost performance on imbalanced datasets, setting a new state-of-the-art.
- Created a Hessian-based regularization method that improves generalization by leveraging the similarity between layerwise and overall Hessians, enhancing regularizer efficiency.
- ★ Published in **AAAI'21** and **ICVGIP'21**.

RESEARCH PROJECTS

AWARE: Adaptive Wear-levelling and Attack Re-mapping Engine

June'24 - Dec'24

Advisor : *Dr Shirshendu Das (IIT-H)*

| [Report](#) |

- Proposed a novel framework that enhances NVM durability and security in LLCs by combining adaptive wear-leveling and attack mitigation through intelligent remapping and workload-aware strategies.

Large Language Models related Hardware Optimizations

Advisors : *Dr Rajesh Kedia & Dr Shirshendu Das (IIT-H)*

Jan'24 - April'24

| [Report](#) |

- o Analyzed hardware and software optimizations to improve Large Language Models, identifying gaps like fragmented benchmarking and advocating for unified solutions to boost efficiency.

Theoretical Analysis of Neural Collapse in Long-Tailed Continual Learning

Advisor: *Dr Vineeth N Balasubramanian (IIT-H)*

Jan'24 - April'24

| [Report](#) |

- o Uncovered and addressed key limitations in existing theoretical frameworks for analyzing Neural Collapse in continual learning, extending their applicability to Long-Tailed Continual Learning.

TARM: Token Averaging Recurrent Memory Transformers

Advisor : *Dr C Krishna Mohan (IIT-H)*

Jan'23 - April'23

| [Report](#) | [Code](#) |

- o Proposed TARM, a novel method using exponential moving average on memory tokens to boost memory capacity in Recurrent Memory Transformers, enhancing long-term dependency capture and training stability.

ACHIEVEMENTS

Reliance Foundation Postgraduate Scholarship

Awarded to Top 100 Students Nationwide. Scholarship Value: 6 Lakhs

'23 - '25

TiDeL Hackathon

First Place

'24

| [Report](#) |

Amazon Machine Learning Summer School

'24

VOLUNTEERING

Research

Reviewer: ECCV'22

Sub-Reviewer: CVPR'23, ICLR'21, IJCAI'20, WACV'23, SDM'21

Student Volunteer: ACML'22, ICML'20

Academic TAships

Deep Learning for Computer Vision (NPTEL) ('24, '20)

AI and Emerging Technologies (TalentSprint + IIT Hyderabad) ('24, '23, '22)

Effective Teaching of Machine Learning (CSEDU IIIT Delhi) ('22, '21)

Reinforcement Learning (AI 3000 / CS 5500) (IIT Hyderabad) ('22)

Advanced Topics in Machine Learning (AI 2100 / CS 6360) (IIT Hyderabad) ('21)

REFERENCES

- o [Dr. Vineeth N. Balasubramanian](#), Professor, IIT-H, India.
- o [Dr. Makarand Tapaswi](#), Sr. ML Scientist, Wadhvani AI | Assistant Professor, IIIT-H, India.
- o [Dr. Marc T. Law](#), Sr. Research Scientist, NVIDIA, Canada.