Anay Majee

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Education

- **The University of Texas at Dallas** — Texas, United States
  PhD in Computer Science; *GPA: **3.78/4.0*** *Aug. 2022 – Present*
- **Vellore Institute of Technology** — Chennai, India
  BTech.in Electrical and Electronics Engineering; *GPA: **9.68/10.0 (Gold Medalist)*** *Jun. 2014 – May. 2018*

Experience

- **Dolby Laboratories** — California, United States
  Research Intern *May. 2025 - Aug. 2025*
  - **Multi-Modal Long Video Understanding**: Developing a *Multi-Modal Generative Model* (GenAI) for improving **Video-Language understanding** in long-form video sequences. Inspired from Live Sports and Cinema content, not all frames in a video is relevant to understanding tasks, we developed a combinatorial approach to identify a set of video segments relevant to answering the question achieving ∼4% boost in performance on several Video LLMs. This work is scheduled for submission into CVPR'26.
- **Fujitsu Research** — California, United States
  Research Intern *May. 2024 - Aug. 2024*
  - **Tabular Graph-Language Multi-Modal Learning**: Developed a *Foundation Model* towards cross-table generalization in tabular data by minimizing the consistency between graph (learnt from a **Graph Transformer** network) and text (learnt from a BART based **Large Language Model** (LLM) encoder) modalities generated from each record in large tables. This work has been accepted to AAAI'25.
- **CARAML Lab, The University of Texas at Dallas** — Texas, United States
  Research Assistant *Aug. 2022 - May 2025*
  - **Submodular Combinatorial Representation Learning**: Advised by Prof. **Rishabh Iyer** towards introducing a paradigm shift in Machine Learning to adopt set-based **Submodular functions as learning objectives** to overcome inter-class bias and intra-class variance (accepted to ICML'24) in **longtail recognition** and **Few-Shot Object Detection** (accepted to ECCV'24), improving performance by upto 7.6% and 5.7% respectively.
  - **Submodular In-Context Learning**: Developed a novel architecture improving **Information Retrieval** performance through **In-Context Learning**, leveraging Submodular Point Processes (SPPs) in LLMs (submitted to ACL'25), enforcing quality and diversity among selected embeddings.
- **Microsoft** — Bangalore, India
  Data and Applied Scientist 2 *Mar. 2022 - Aug. 2022*
  - **Dense Information Retrieval in Search Advertising**: Developed an **Entity Centric Large Language Model** to improve identification of products, brands etc. resulting in *12% revenue gain in Search Advertising.* Mentored an intern to develop an evaluation framework to benchmark entity centric language models which is used across 3+ teams in Microsoft Advertising.
- **Intel** — Bangalore, India
  Applied Research Scientist *May. 2018 - Mar.2022*
  - **Few-Shot Road Object Detection**: Led the development of **Few-Shot Object Detection** (FSOD) and **Few-Shot Incremental Learning** (FSIL) algorithms in ***Pytorch*** for detecting rare or unseen road objects in unconstrained driving environments and collected the first ***Few-Shot India Driving dataset***.

Notable Publications

- **Looking Beyond the Known: Towards a Data Discovery Guided Open-World Object Detection** — NeurIPS 2025
  ***Anay Majee**, Amitesh Gangrade, Rishabh Iyer* *Dec. 2025*
- **SHaSaM: Submodular Hard Sample Mining for Fair Facial Attribute Recognition** — WACV 2026
  ***Anay Majee**, Rishabh Iyer* *Under Review*
- **InSQuAD: In-Context Learning for Efficient Retrieval via Submodular Mutual Information to Enforce Quality and Diversity** — ICDM 2025
  Souradeep Nanda, **Anay Majee***, Rishabh Iyer* *Nov. 2025*

- **TabGLM: Tabular Graph Language Model for Learning Transferable Representations Through Multi-Modal Consistency Minimization** AAAI 2025
  Anay Majee*, Maria Xenochristou*, Wei-Peng Chen* *Feb. 2025*
- **SMILe: Leveraging Submodular Mutual Information for Robust Few-Shot Object Detection** ECCV 2024
  Anay Majee*, Ryan Sharp, Dr. Rishabh K. Iyer* *Jul. 2024*
- **SCoRe: Submodular Combinatorial Representation Learning** ICML 2024
  Anay Majee*, Suraj Kothawade , Krishnateja K. , Dr. Rishabh K. Iyer* *May 2024*
- **Attention Guided Cosine Margin for Overcoming Class-Imbalance in FSOD** WACV-W 2022
  Ashutosh Agarwal, ***Anay Majee****, Dr.Anbumani Subramanian and Dr.Chetan Arora* *Jan. 2022*
- **Meta-Guided Metric Learner for Overcoming Class Confusion in FSOD** NeurIPS-W 2021
  Anay Majee*, Dr.Anbumani Subramanian and Kshitij Agrawal* *Oct. 2021*
- **Few-Shot Batch Incremental Road Object Detection via Detector Fusion** ICCV-W 2021
  Anuj Tambwekar, Kshitij Agrawal, ***Anay Majee*** *and Dr.Anbumani Subramanian* *Aug. 2021*
- **Few-Shot Learning for Road Object Detection** AAAI-W 2021
  Anay Majee*, Kshitij Agrawal* and Dr.Anbumani Subramanian* *Feb. 2021*

Other publications are available on my **Google Scholar** profile. * Equal contributions.

Patents

- **SCOUT: Segment Curation for Optimal Understanding of Long-Form Videos** US Patent Submitted
  Co-Authors: Gauri Jagatap, Deepak Chandran and Andrea Fanelli *Aug. 2025*
  - Video Understanding agent which scouts for relevant information in long form videos in cinema / live sports.
- **Tabular Graph Language Model With Multi-Modal Learning** US Patent Submitted
  Co-Authors: Maria Xenochristou and Wei-Peng Chen *Jan. 2025*
  - Process patent to extract both semantic and structural information from heterogeneous tables.
- **Virtual Electrical Networks** US Patent Office (USPTO)
  Co-Authors: Dileep Paruchuri, Pranesh SK and Yashasvi Bhargava *Dec. 2020*
  - Virtualization of microgrid infrastructures to perform non-invasive identification of faulty nodes and to achieve load balancing for the conservation of energy resources.
- **IoT Based Industrial Energy Monitoring and Control System** Indian Patent Office
  Dr. Gnana Swathika O.V and Madhav Bhatia *Nov. 2023*
  - Smart Energy monitoring and control infrastructure to collect, analyse and visualize electrical energy utilization data from microgrids to address critical faults without human supervision.

Awards and Recognitions

GSA Travel Award, UT Dallas, TX, USA	1/1000+ applicants	*2024*
Division Recognition Award, VSG team, Intel India	One among 45 employees	*2021*
Rising Star of the Year, VSG team, Intel India	One among 26 employees	*2019*
Gold Medalist, School of Electrical Engg., VIT University	1^{st} among 800 students	*2018*

Services and Volunteering

- **Reviewer: NeurIPS'25, CVPR'25, TPAMI, ICLR'24, WACV'25,22, BMVC'21** Jul. 2021 - Present
  Virtual
- **Teaching Assistant, CS 4375 and CS 6375: Machine Learning** Fall 2022, Spring 2024
  UT Dallas, Richardson, TX
  Teaching Assistant for the undergraduate Machine Learning Course for a class of 101 students.
- **Speaker, Guest Lecture on - Can Machines See Like Humans?** Nov. 2021
  VIT University, Chennai Campus
  Delivered a guest lecture to undergraduate students on the advancements in computer vision and highlight the importance of interdisciplinary research.
- **Speaker, Technical Leadership Development Session (Asia Pacific)** Aug. 2021
  Intel India
  Delivered a talk on Few-Shot Learning for Detection Less-Occuring Road Objects for Driving Systems.
- **Invited Speaker, EPIC Conference** Feb. 2020
  Vishakhapattanam, India
  Delivered an invited talk on "Learning to Learn" - A Meta-Learning approach to computer vision tasks.