AVINASH MADASU

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EDUCATION

Master of Science, Computer Science August 2021 - May 2023
University of North Carolina at Chapel Hill

Bachelor of Technology, Computer Science July 2014 - May 2018
National Institute of Technology Tiruchirappalli

EXPERIENCE

Intel Corporation **June 2023 - present**
AI Research Scientist

- Developed long-context compression techniques for on-device AI agents on Battlemage GPUs, compressing 2K-token contexts by 70% while preserving performance.
- Pioneered a novel multimodal Chain-of-Thought (CoT) reasoning approach, leveraging synthetic data generation to substantially improve performance in reasoning models like LLaVA.
- Developed a novel interpretability framework for CLIP models; empirically identified that a shared subset of attention heads governs both downstream performance and the emergence of social biases.
- Built a large-scale diffusion-model pipeline generating 10M+ counterfactual images across distributed accelerators, distilled into a 171K-pair benchmark to systematically audit and mitigate intersectional bias in production vision-language models.

Intel Corporation **May 2022 - Aug 2022**
Research intern

- Architected a scalable pseudo-labeling and knowledge-transfer pipeline expanding video search to 50+ languages, eliminating large-scale manual labeling and enabling zero-shot multilingual retrieval across internal platforms.
- Published in ECIR 2023, a top Information Retrieval conference, and won the Best Student Paper Award and also the first work to leverage the Gaudi AI accelerator.

UNC Chapel Hill **August 2021 - May 2023**
Graduate Research Assistant Advisor: Prof. Gedas Bertasius

- Proposed a new interactive video retrieval system that leverages dialog with the users. The proposed approach requires minimum rounds of dialog to outperform the human dialog.
- Proposed interactive system outperformed static video retrieval models by 2.8 points in R@1 and 10 points in R@5. This system is the first to use generative models (BART, T5) to perform open ended dialog with the users.

UNC Chapel Hill **August 2021 - November 2021**
Graduate Research Assistant Advisor: Prof. Shashank Srivastava

- Explored the inductive biases in pre-trained language models for solving non-linguistic reasoning tasks.
- Proposed a set of 19 diverse non-linguistic tasks involving quantitative computations, recognizing regular expressions and reasoning over strings and published this work in EMNLP 2022.

Samsung R&D Institute India - Bangalore   **June 2018 - July 2021**
Senior Software Engineer

- Built and deployed GDPR-compliant named entity recognition systems protecting phone numbers, personal identities, and financial data across billions of voice interactions in global environments.
- Led the design and deployment of a lightweight detection framework achieving 90% accuracy across 10 applications, reducing intent and application misidentification and improving end-to-end command success rates in Bixby voice assistant systems.
- Built and deployed a large-scale ULMFiT-based feedback prediction system achieving 90% failure-detection accuracy across billions of user text commands, enabling systematic identification and correction of Bixby interaction failures in production across Clock, Messages, Calendar, and additional core applications.

IIT Patna   **July 2020 - January 2021**
Research Assistant   Advisor: Prof. Asif Eqbal

- Proposed an End-to-End model capable of identifying slots from user utterances without external slot labels.
- Published one of the earliest works to use large scale pretraining in dialog systems which significantly improved slot identification accuracy and dialog generation.

National Institute of Technology, Tiruchirappalli   **July 2017 - May 2018**
Research Assistant   Advisor: Prof. Sivasankar

- Designed efficient lexicon based feature selection techniques that achieved excellent performance in resource scarce conditions. This work was published in the journal of multimedia tools and applications.
- Conducted a systemtic study on the advantages and disadvantages of statistical feature selection techniques vs neural network techniques (word2vec, Doc2vec).
- Explored the possibility of combining text reviews with numerical ratings to design a hybrid recommender system.

PUBLICATIONS

1. Is Your Paper Being Reviewed by an LLM? Benchmarking AI Text Detection in Peer Review
   Sungduk Yu, Man Luo, **Avinash Madasu**, Vasudev Lal, Phillip Howard
   ICLR 2026

2. Learning from Reasoning Failures via Synthetic Data Generation
   Gabriela Ben Melech Stan, Estelle Aflalo, **Avinash Madasu**, Vasudev Lal, Phillip Howard
   AAAI 2026

3. Pruning the Paradox: How CLIP's Most Informative Heads Enhance Performance While Amplifying Bias
   Avinash Madasu, Vasudev Lal, Phillip Howard
   EMNLP 2025 (Oral) (Senior Area Chair Recommendation)

4. Affective Visual Dialog: A Large-Scale Benchmark for Emotional Reasoning Based on Visually Grounded Conversations
   Kilichbek Haydarov, Xiaoqian Shen, **Avinash Madasu**, Mahmoud Salem, Jia Li, Gamaleldin Elsayed, Mohamed Elhoseiny
   ECCV 2024

5. Probing and Mitigating Intersectional Social Biases in Vision-Language Models with Counterfactual Examples
Phillip Howard, **Avinash Madasu**, Tiep Le, Gustavo Lujan Moreno, Anahita Bhiwandiwalla, Vasudev Lal
CVPR 2024

6. ICSVR: Investigating Compositional and Syntactic Understanding in Video Retrieval Models
Avinash Madasu, Vasudev Lal
CVPR (MMFM workshop) 2024

7. Analyzing Zero-Shot Abilities of Vision-Language Models on Video Understanding Tasks
Avinash Madasu, Anahita Bhiwandiwalla, Vasudev Lal
NeurIPS (R0-FoMo workshop) 2023

8. Probing Intersectional Biases in Vision-Language Models with Counterfactual Examples
Phillip Howard, **Avinash Madasu**, Tiep Le, Gustavo Lujan Moreno, Vasudev Lal
NeurIPS (Diffusion models workshop) 2023

9. MuMUR: Multilingual Multimodal Universal Retrieval
Avinash Madasu, Estelle Guez Aflalo, Gabriela Ben Melech Stan, Shachar Rosenman, Shao-Yen Tseng, Gedas Bertasius, Vasudev Lal
Information Retrieval Journal

10. A Unified Framework for Slot based Response Generation in a Multimodal Dialogue System
Mauajama Firdaus*, **Avinash Madasu***, Asif Eqbal
Journal of Multimedia Tools and Applications

11. Is Multi-Modal Vision Supervision Beneficial to Language?
Avinash Madasu, Vasudev Lal
CVPR (NFVLR workshop) 2023

12. A Unified Framework for Emotion Identification and Generation in Dialogues
Avinash Madasu*, Mauajama Firdaus*, Asif Eqbal
EACL (SRW workshop) 2023

13. Improving video retrieval using multilingual knowledge transfer
Avinash Madasu, Estelle Guez Aflalo, Gabriela Ben Melech Stan, Shao-Yen Tseng, Gedas Bertasius, Vasudev Lal
ECIR 2023 (Best Student Paper Award)

14. What do Large Language Models Learn beyond Language?
Avinash Madasu, Shashank Srivastava
EMNLP (Findings) 2022

15. Learning to Retrieve Videos by Asking Questions
Avinash Madasu, Junier Oliva, Gedas Bertasius
ACM Multimedia 2022

16. Sequential Domain Adaptation through Elastic Weight Consolidation for Sentiment Analysis
Avinash Madasu, Vijjini Anvesh Rao
ICPR 2020

17. [A Position Aware Decay Weighted Network for Aspect based Sentiment Analysis](#)
Avinash Madasu, Vijjini Anvesh Rao
NLDB 2020

18. [Sequential Learning of Convolutional Features for Effective Text Classification](#)
Avinash Madasu, Vijjini Anvesh Rao
EMNLP 2019

19. [Efficient Feature Selection techniques for Sentiment Analysis](#)
Avinash Madasu, Sivasankar E
Journal of Multimedia Tools and Applications

20. [Gated Convolutional Neural Networks for Domain Adaptation](#)
Avinash Madasu, Vijjini Anvesh Rao
NLDB 2019

21. [Effectiveness of Self Normalizing Neural Networks for Text Classification](#)
Avinash Madasu, Vijjini Anvesh Rao
CICLing 2019

22. [A Study of Feature Extraction techniques for Sentiment Analysis](#)
Avinash Madasu, Sivasankar E
IEMIS 2018

PREPRINTS

1. [Multimodal Dialogue Modeling: Simultaneous Intent Recognition and Response Generation](#)
Avinash Madasu*, Mauajama Firdaus*, Asif Ekbal

VOLUNTEER EXPERIENCE

Conference Reviewer: CVPR 2026, ICCV 2025, EMNLP 2025, COLM 2024, CVPR 2024, ICLR 2024, AAAI 2024, EMNLP 2023, AMLC 2023, NeurIPS 2023, BMVC 2023, CoLLA 2023, ACL 2023, CVPR 2023, EACL 2023, ACL 2022, ACL 2021, ICON 2020
Journal Reviewer: Machine learning, TMLR, Computer Speech & Language
Workshop Reviewer: ICLR - MoFo 2023, ICLR - MRL 2023, SocialNLP

PRESS

- [The Jerusalem Post](#)
- [Outlook India](#)
- [Analytics India Magazine](#)

AWARDS

- [Outstanding reviewer - ACL 2023](#)
- Best Student Paper Award - ECIR 2023.
- ACM grant to attend ACM Multimedia 2022 conference.
- Samsung Citizen Award 2019, 2020 (Research) (4/9000).

OPEN SOURCE DEEP LEARNING FRAMEWORKS CONTRIBUTIONS

- gluonnlp (Contributor and Member of Distributed Machine Learning Community- dmlc).

- serve

- pytorch-optimizer.

- catalyst

- AllenNLP

RELEVANT LINKS

- Google Scholar: https://scholar.google.com/citations?user=YReOruYAAAAJ&hl=en

- DBLP: https://dblp.org/pid/241/5153.html

- Semantic Scholar: https://www.semanticscholar.org/author/Avinash-Madasu/115098946

- ORCID iD: https://orcid.org/0000-0002-3802-7618