

# AVINASH MADASU

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## EDUCATION

<b>Master of Science</b> , Computer Science University of North Carolina at Chapel Hill	August 2021 - May 2023
<b>Bachelor of Technology</b> , Computer Science National Institute of Technology Tiruchirappalli	July 2014 - May 2018

## EXPERIENCE

<b>Intel Labs</b> AI Research Scientist	<b>June 2023 - present</b>
<ul style="list-style-type: none"><li>Investigated context engineering strategies for maximizing the performance of enterprise agentic systems deployed on Intel hardware.</li><li>Pioneered a novel multimodal Chain-of-Thought (CoT) reasoning approach, leveraging synthetic data generation to substantially improve performance in complex reasoning models.</li><li>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. Selected as an oral paper at EMNLP 2025 by Senior Area Chairs.</li><li>Created and published the first benchmark “SocialCounterFactuals” in CVPR 2024 to evaluate and de-bias intersectional biases in vision-language models which reduced existing biases by &gt;20%.</li></ul>	
<b>Intel Labs</b> Research intern	<b>May 2022 - Aug 2022</b>
<ul style="list-style-type: none"><li>Spearheaded the project ”Improving Multi-modal Video Retrieval Using Multi-lingual Data” from ideation to prototype, model development, and paper writing.</li><li>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.</li></ul>	
<b>UNC Chapel Hill</b> Graduate Research Assistant	<b>August 2021 - Present</b> <i>Advisor: Prof. Gedas Bertasius</i>
<ul style="list-style-type: none"><li>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. The paper was published in ACM Multimedia 2022.</li><li>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.</li></ul>	
<b>UNC Chapel Hill</b> Graduate Research Assistant	<b>August 2021 - November 2021</b> <i>Advisor: Prof. Shashank Srivastava</i>
<ul style="list-style-type: none"><li>Explored the inductive biases in pre-trained language models for solving non-linguistic reasoning tasks.</li><li>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.</li></ul>	
<b>Samsung R&amp;D Institute India - Bangalore</b> Senior Software Engineer on Bixby NLU	<b>June 2018 - July 2021</b>

- Developed and deployed named entity recognition models in compliance with GDPR to identify user sensitive information like phone number, name, bank details etc. This model scaled to billions of user data and was deployed globally in Samsung with access to sensitive information.
- Built a model which identifies utterance executed in a wrong application. This model is built with triplet loss and with a very less data of 150 samples for each application. This model identified misclassified utterances with 90% accuracy and across 10 applications.
- Collaborated with different product engineering teams of Bixby globally (eg: Korea, USA) for successful integration of AI models into Samsung products.

### IIT Patna

Research Assistant

**July 2020 - January 2021**

Advisor: Prof. Asif Eqbal

- Proposed an End-to-End model capable of identifying slots from user utterances without external slot labels. This paper was accepted in the journal Multimedia Tools and Applications.
- 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

Research Assistant

**July 2017 - May 2018**

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 (> 80 citations).
- Conducted a systematic study on the advantages and disadvantages of statistical feature selection techniques vs neural network techniques (word2vec, Doc2vec). This work garnered more than 60 citations.
- Explored the possibility of combining text reviews with numerical ratings to design a hybrid recommender system.

## PUBLICATIONS

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1. 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)*
2. Learning from Reasoning Failures via Synthetic Data Generation  
Gabriela Ben Melech Stan, Estelle Aflalo, **Avinash Madasu**, Vasudev Lal, Phillip Howard  
*CVPR (SynData4CV Workshop) 2025, AAAI 2026 (Under review)*
3. Is Your Paper Being Reviewed by an LLM? Investigating AI Text Detectability in Peer Review  
Sungduk Yu, Man Luo, **Avinash Madasu**, Vasudev Lal, Phillip Howard  
*NeurIPS (Safe Generative AI Workshop) 2024, ICLR 2026 (Under review)*
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 (MMF 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**, Vijiini Anvesh Rao  
*NLDB 2019*
21. Effectiveness of Self Normalizing Neural Networks for Text Classification  
**Avinash Madasu**, Vijiini Anvesh Rao  
*CICLing 2019*
22. A Study of Feature Extraction techniques for Sentiment Analysis  
**Avinash Madasu**, Sivasankar E  
*IEMIS 2018*

## PREPRINTS

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1. Multimodal Dialogue Modeling: Simultaneous Intent Recognition and Response Generation  
**Avinash Madasu\***, Mauajama Firdaus\*, Asif Ekbal

## VOLUNTEER EXPERIENCE

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**Conference Reviewer:** 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

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

## AWARDS

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- 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

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- [gluonnlp](#) (Contributor and Member of Distributed Machine Learning Community- dmlc).
- [serve](#)
- [pytorch-optimizer](#).
- [catalyst](#)
- [AllenNLP](#)

## RELEVANT LINKS

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- Google Scholar: <https://scholar.google.com/citations?user=YRe0ruYAAAAJ&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>