

# GOWTHAMI SOMEPALLI

College Park, Maryland, USA

voice: (+1) 475-228-4318 · email: [gowthami@umd.edu](mailto:gowthami@umd.edu)

web: <https://somepago.github.io>

## RESEARCH INTERESTS

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My research is focused on understanding the failure modes of deep learning models, both discriminative and generative. Lately, my efforts have primarily centered on understanding multimodal generative models, particularly Text-to-Image Diffusion models and Video Language Models.

## EDUCATION

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**University of Maryland, College Park** Aug. 2019 - Present

M.S. + Ph.D. in Computer Science (4.0/4.0)

*Ann Wylie Doctoral Fellowship, Kulkarni fellow, Amazon Fellowship*

Advisor: [Tom Goldstein](#)

**Indian Institute of Technology Madras** Aug. 2006 - Dec. 2011

Bachelors + Masters in Mechanical Engineering

Advisor: [Raghu Prakash](#)

## SELECTED PUBLICATIONS

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Visit my Google Scholar [T2ezBDsAAAAJ](#) for complete list

- Measuring Style Similarity in Diffusion Models [ECCV](#), 2024  
**G. Somepalli**, A. Gupta, K. Gupta, M. Goldblum, J. Geiping, A. Shrivastava, T. Goldstein
- CinePile: A Long Video Question Answering Dataset and Benchmark [web](#), 2024  
R. Rawal, K. Saifullah, R. Basri, D. Jacobs, T. Goldstein\*, **G. Somepalli\*** *Best Paper, SynCV, CVPR 2024*
- Understanding and Mitigating Copying in Diffusion Models [NeurIPS](#), 2023  
**G. Somepalli**, V. Singla, M. Goldblum, J. Geiping, T. Goldstein
- Battle of the backbones: A large-scale comparison of pretrained models across CV tasks [NeurIPS](#), 2023  
M. Goldblum, H. Souri, R. Ni, M. Shu, V. Prabhu, **G. Somepalli**, P. Chattopadhyay, M. Ibrahim, A. Bardes, J. Hoffman, R. Chellappa, AG Wilson, T Goldstein
- Diffusion Art or Digital Forgery? Investigating Data Replication in Diffusion Models [CVPR](#), 2023  
**G. Somepalli**, V. Singla, M. Goldblum, J. Geiping, T. Goldstein *TechCrunch coverage - [link](#)*
- How much Data is Augmentation Worth? [web](#), ICLR 2023  
J. Geiping, **G. Somepalli**, R. Shwartz-Ziv, A. G. Wilson, T. Goldstein, M. Goldblum
- Investigating Reproducibility and Double Descent from the DB Perspective [web](#), CVPR (Oral) 2022  
**G. Somepalli**, L. Fowl, A. Bansal, P. Yeh-Chiang, Y. Dar, R. Baraniuk, M. GoldBlum, T. Goldstein
- SAINT: Improved NNs for Tabular Data via Row Attention and Contrastive PT [web](#), NeurIPS TRLW 2022  
**G. Somepalli**, M. Goldblum, A. Schwarzschild, C.B. Bruss, T. Goldstein *350+ stars on Github*
- PatchGame: Learning to Signal Mid-level Patches in Referential Games [web](#), NeurIPS 2021  
K. Gupta, **G. Somepalli**, Anubhav, V. Jayasundara, M. Zwicker, A. Shrivastava
- Unsupervised Anomaly Detection with Adversarial Mirrored AutoEncoders [web](#), UAI (Oral) 2021  
**G. Somepalli**, Y. Wu, Y. Balaji, B. Vizumuri, S. Feizi
- FUGUE : Characterizing functional genes across human tissues [web](#), PLOS CompBio 2021  
**G. Somepalli**, S. Sahoo, S. Hannenhalli
- Adversarial Training against Poisons and Backdoors [web](#), 2021  
J. Geiping, L. Fowl, **G. Somepalli**, M. Goldblum, M. Moeller, T. Goldstein

## WORK EXPERIENCE

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**Meta AI** 2023 – 2023  
*Research Internship* New York, NY

- Long video understanding with LLMs. Curated instruction data and trained a video LLM from scratch with interleaved vision and text tokens.

**Amazon AWS AI** 2022 – 2022  
*Summer Internship* Pasadena, CA

- Understanding and reducing regression in deep learning models via model soups.

## Flipkart

*Business Manager - Sell side*

2017 - 2018

*Bengaluru, India*

- Led the demand planning and forecasting for the TV category; revamped the legacy data collection and modeling techniques. Reduced the overstocking by 15% and reduced the lost potential sales due to out-of-stock issues by 10% within my 6 months of joining.
- Won Annual **Business Excellence Award** for the most business growth via product innovation.

## Poolka Technologies

*Cofounder*

2015-2017

*Bengaluru, India*

Poolka provides scalable visual recognition APIs to developers & businesses.

- Built **Fairi**, a fashion assistant chatbot that provides fashion recommendations based on social media trends and users' existing wardrobe. Iterated & improved the product with 2000+ beta users.
- Selected for **Microsoft Bizspark** and **IBM Global Entrepreneur Program**. (>\$20000 cloud credits per year)

## General Electric, Oil & Gas

*Engineer/ Synergy Leader*

2013 - 2015

*Bengaluru, India*

As a technologist in GE, I worked primarily on following two projects -

- Upgrading reciprocating compressors (RC) for Petrochemical plants - Led team that designed and validated various RC components. Awarded **Project of the Quarter** (Oct 2014- Dec 2014) and the automation work on Torsional Vibration Analysis won **Kaizen Award** (Mar 2015).
- GE-Cameron Synergy - Was single point of contact in Bangalore during the GE acquisition of Cameron. Performed Root Cause Analysis (RCA) for multiple Cameron products. Was accoladed by Senior management - GE Oil & Gas, Italy for my role in the synergy.

## Renault-Nissan India

*Engineer/ Component Leader*

2011 - 2013

*Chennai, India*

- Led Engine Mounting Team for Renault Duster and Renault Lodgy Indian releases. Led components unification initiative between Renault and Nissan vehicles reducing the cost per part by 25%. Designed and tested the Rear AC for Renault Duster and Nissan Terrano Indian variations.

## INVITED TALKS

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- Measuring Style Similarity in Diffusion Models - ML Collective (Jul'24)
- CinePile: A Long Video QA Dataset and Benchmark - CVPR Syn4CV, SyntaGen workshops (Jun'24)
- Mitigating Memorization in Diffusion Models - Cohere (May'24), NeurIPS Diffusion workshop (Dec'23), WACV tutorial (Jan'24)
- Understanding Data Replication in Diffusion Models - Google Deepmind (Aug'23), TikTok US (May'23), ML Collective (Mar'23), ICML GenLaw (Jul'23)
- Investigating Reproducibility from the DB Perspective - WiML workshop @NeurIPS (Nov'22), Google Research India (Apr'22), TOPML Workshop (Mar'22)
- SAINT: Transformers for tabular data - G-Research, UK (Nov'22)
- Transformers for Vision - a mini survey - ML Seminar Series, UMD (Oct'21)
- Learnings from running a B2B tech startup in India - Headstart, Bengaluru (2017)

## MEDIA COVERAGE

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- [littlecoder Podcast](#) Multimodality and CinePile 2024
- [MarkTechPost](#) UMD Researchers proposed a framework for extracting style from images. 2024
- [AiToolHouse](#) A Novel Dataset and Benchmark for Long-Form Video Understanding 2024
- [Ars Technica](#) Stable Diffusion copyright lawsuits could be a legal earthquake for AI 2023
- [TechCrunch](#) - Image-generating AI can copy and paste from training data, raising IP concerns 2022

## MISCELLANEOUS

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- Reviewer - NeurIPS, ICLR, CVPR, ECCV 2022-Present
- **Founder of @MLSummaries** twitter and medium accounts. 4000+ followers. 2021-Present
- Initiated student-led Machine Learning Seminar Series, UMD. 2021-Present
- **Mentor:** Tech + Research program in Technica. 2020, 2023
- Master's research Scholarship by Ministry of Human Resources and Development, Govt. of India. May 2010
- National Talent Search Exam Scholarship by Govt. of India. 2005-11
- Prathibha Award by Andhra Pradesh State Govt. 2003