

TEJAS GOKHALE

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🌐 tejasgokhale.com

🔍 [Google Scholar](#)

RESEARCH INTERESTS

My mission is to research and develop robust and reliable AI systems by leveraging the complex interactions between vision and language. I work at the wonderful intersection of machine learning, computer vision, and natural language processing. My domain expertise lies in devising adversarial machine learning algorithms, semantic data engineering techniques, and evaluation protocols for out-of-distribution environments.

EDUCATION

- Doctor of Philosophy, Arizona State University** 2018–present
School of Computing and Augmented Intelligence
Advisors: Yezhou Yang, Chitta Baral
- Master of Science, Carnegie Mellon University** 2017
Department of Electrical and Computer Engineering
Advisor: Aswin Sankaranarayanan
- Bachelor of Engineering (Honours), Birla Institute of Technology and Science** 2015
Department of Electrical and Electronics Engineering

RESEARCH EMPLOYMENT

- Microsoft Research** Summer 2022
Research Intern, [Adaptive Systems and Interaction Group](#)
Mentors: Hamid Palangi (+Besa Nushi, Vibhav Vineet, Eric Horvitz)
- Lawrence Livermore National Laboratory** Summer 2021
Research Scholar, [Machine Intelligence Group](#)
Mentor: Rushil Anirudh (+Jay Thiagarajan, Bhavya Kailkhura)
- Lawrence Livermore National Laboratory** Summer 2020
Research Scholar, [Machine Intelligence Group](#)
Mentor: Rushil Anirudh (+Jay Thiagarajan, Bhavya Kailkhura)
- Arizona State University** 2018–2023
Graduate Research Associate, [School of Computing and AI](#)
Yezhou Yang + Chitta Baral
- Snapchat Research** Summer 2018
Research Intern, [Computational Imaging Group](#)
Mentors: Guru Krishnan + Shree Nayar
- Carnegie Mellon University** 2017–2018
Graduate Student Researcher, [Image Science Lab](#)
Advisor: Aswin Sankaranarayanan
- ST Microelectronics India** Fall 2014
Intern, High Speed Links Group

My work has been published at AACL (h5-index: 180); computer vision venues: ICCV (h5-index: 239), ECCV (h5-index: 186), WACV (h5-index: 76); NLP venues: ACL (h5-index: 169), EMNLP (h5-index: 154), NAACL (h5-index: 105).

🕒 Conference Proceedings

- [C1] *Improving Diversity with Adversarially Learned Transformations for Domain Generalization*
T. Gokhale, R. Anirudh, J. Thiagarajan, B. Kailkhura, C. Baral, Y. Yang
<https://arxiv.org/abs/2206.07736> to appear in WACV 2023
- [C2] *CRIPP-VQA: Counterfactual Reasoning about Implicit Physical Properties via Video Question Answering*
M. Patel, T. Gokhale, C. Baral, Y. Yang
<https://arxiv.org/abs/2211.03779> to appear in EMNLP 2022
- [C3] *Semantically Distributed Robust Optimization for Vision-and-Language Inference*
T. Gokhale, A. Chaudhary, P. Banerjee, C. Baral, Y. Yang
<https://arxiv.org/abs/2110.07165> ACL Findings 2022
- [C4] *Generalized but not Robust? Comparing the Effects of Data Modification Methods on Out-of-Domain Generalization and Adversarial Robustness*
T. Gokhale, S. Mishra, M. Luo, B. Sachdeva, C. Baral
<https://arxiv.org/abs/2203.07653> ACL Findings 2022
- [C5] *Unsupervised Natural Language Inference Using PHL Triplet Generation*
N. Varshney, P. Banerjee, T. Gokhale, C. Baral
<https://arxiv.org/abs/2110.08438> ACL Findings 2022
- [C6] *To Find Waldo You Need Contextual Cues: Debiasing Who's Waldo*
Y. Luo, P. Banerjee, T. Gokhale, Y. Yang, C. Baral
<https://arxiv.org/abs/2203.16682> ACL 2022
- [C7] *Improving Biomedical Information Retrieval with Neural Retrievers*
M. Luo, A. Mitra, T. Gokhale, C. Baral
<https://arxiv.org/abs/2201.07745> AACL 2022
- [C8] *Weakly Supervised Relative Spatial Reasoning for Visual Question Answering*
P. Banerjee, T. Gokhale, Y. Yang, C. Baral
<https://arxiv.org/abs/2109.01934> ICCV 2021
- [C9] *WeaQA: Weak Supervision via Captions for Visual Question Answering*
P. Banerjee, T. Gokhale, Y. Yang, C. Baral
<https://arxiv.org/abs/2012.02356> ACL Findings 2021
- [C10] *Self-Supervised Test-Time Learning for Reading Comprehension*
P. Banerjee, T. Gokhale, C. Baral
<https://arxiv.org/abs/2103.11263> NAACL 2021

- [C11] *Attribute-Guided Adversarial Training for Robustness to Natural Perturbations*
T. Gokhale, R. Anirudh, B. Kailkhura, J. Thiagarajan, C. Baral, Y. Yang
<https://arxiv.org/abs/2012.01806> AAAI 2021
- [C12] *Mutant: A Training Paradigm for Out-of-Distribution Generalization in Visual Question Answering*
T. Gokhale, P. Banerjee, C. Baral, Y. Yang
<https://arxiv.org/abs/2009.08566> EMNLP 2020
- [C13] *Video2commonsense: Generating commonsense descriptions to enrich video captioning*
 Z. Fang*, **T. Gokhale***, P. Banerjee, C. Baral, Y. Yang
<https://arxiv.org/abs/2003.05162> EMNLP 2020
- [C14] *VQA-LOL: Visual question answering under the lens of logic*
T. Gokhale, P. Banerjee, C. Baral, Y. Yang
<https://arxiv.org/abs/2002.08325> ECCV 2020

🕒 Workshop Proceedings

(2 CVPR, 1 NeurIPS)

- [W1] *Covariate Shift Detection via Domain Interpolation Sensitivity*
T. Gokhale, J. Feinglass, Y. Yang
<https://openreview.net/pdf?id=YkPjTHZDdm> [SPOTLIGHT] NeurIPS 2022 Interpolate Workshop
- [W2] *Halluci-Net: Scene Completion by Exploiting Object Co-occurrence Relationships*
 K. Kulkarni, **T. Gokhale**, R. Singh, P. Turaga, A. Sankaranarayanan
<https://arxiv.org/abs/2004.08614> AI for Content Creation @ CVPR 2021
- [W3] *Cooking With Blocks: A Recipe for Visual Reasoning on Image-Pairs*
T. Gokhale, S. Sampat, Z. Fang, Y. Yang, C. Baral
 Long version: <https://arxiv.org/abs/1905.12042> Vision Meets Cognition @ CVPR'19

🕒 Preprints

- [P1] *Benchmarking Spatial Relationships in Text-to-Image Generation*
T. Gokhale, H. Palangi, B. Nushi, V. Vineet, E. Horvitz, E. Kamar, C. Baral, Y. Yang
<https://arxiv.org/abs/2212.10015> in review
- [P2] *Poisoning of Image Classifiers via Selective Batch Sampling*
 E. Wisdom, **T. Gokhale**, Y. Yang in review
- [P3] *End-to-end Knowledge Retrieval for Multi-modal Queries*
 M. Luo, Z. Fang, T. Gokhale, Y. Yang, C. Baral in review

🕒 Book Manuscript

- [B1] *Advances in Multi-Modal Information Retrieval*
 (In Preparation) Springer Synthesis Lectures

🕒 Grant Writing

I am actively involved in conceptualizing and writing grant proposals with my advisors. This proposed work builds upon contributions made by my PhD thesis. Note: I am not a PI on these grants.

- [1] *Environment-driven Conceptual Learning*
PI: Chitta Baral *Submitted to DARPA, 2022*
- [2] *Decentralized Authorship Attribution*
PI: Chitta Baral *Submitted to IARPA, 2022*
- [3] *An Active Approach for Data Engineering to Improve Vision-Language Tasks*
PI: Yezhou Yang, Co-PI: Chitta Baral *Funded by NSF, 2021*

INVITED TALKS

Jan'23, (*Tutorial*) "Semantic Data Engineering for Robustness Under Multimodal Settings" WACV 2023, Hawaii
Oct'22, (*Invited Talk*) "Robust Semantic Vision" University of Illinois at Chicago
Oct'22, (*Invited Talk*) "Benchmarking Spatial Relationships in Text-to-Image Generation" Microsoft Research
Mar'22, (*Guest Lecture*) "Introduction to Generalization in Semantic Vision" ASU CSE 598
Sep'21, (*Invited*) "Robust Visual Understanding", ASU ML Club
Aug'19, "Vision Beyond Pixels", IJCAI Doctoral Consortium, IJCAI 2019, Macao
Jul'19, "Reasoning about Objects and Actions via Block-Play", Telluride 2019
Apr'18, (*Invited*) "Deep Learning Methods in Imaging and Computer Vision", BITS Goa

TEACHING

Tutorial

SERUM: Semantic Data Engineering for Robustness Under Multimodal Settings WACV 2023, Hawaii

Teaching Assistant, Arizona State University

CSE310: Data Structures & Algorithms Spring 2020, ASU
CSE408: Multimedia Information Systems, Spring 2019, ASU
CSE110: Introduction to Programming, Fall 2018, ASU

Guest Lecturer

CSE598, Perception in Robotics Spring 2022, ASU
CSE408, Multimedia Information Systems Spring 2019, ASU

Course Development

CSE591: Frontier Topics in Vision & Language [\[YouTube\]](#) [\[website\]](#) Spring 2021, ASU
CTE: Advanced Image Processing, Spring 2015, BITS Pilani

MENTORING

PhD Students

Ethan Wisdom (see publication [\[P2\]](#)) Ph.D. CS [current]
Maitreya Patel (see publication [\[C2\]](#)) Ph.D. CS [current]
Agneet Chatterjee Ph.D. CS [current]

MS (Thesis) Students

Maitreya Patel (see publication [C2])

M.S. CS

Abhishek Chaudhary (see publication [C3])

M.S. CS 2021 [thesis]

Capstone Mentor, mentored five students in projects on visual reasoning

AY 2019-20

UG research mentor (FURI @ ASU), Mertay Dayanc

BS CS, 2020

Project Mentor, CSE598 - Perception in Robotics, ASU

Spring 2022

Project Mentor, CSE576 - Natural Language Processing, ASU

Fall 2018

SERVICE / LEADERSHIP

Program Committee / Conference Reviewer

CVPR: IEEE/CVF Conference on Computer Vision and Pattern Recognition

2023

ICML: International Conference on Machine Learning

2023

NeurIPS: Advances in Neural Information Processing Systems

2022

ICLR: International Conference on Learning Representations

2022

AAAI: AAAI Conference on Artificial Intelligence

2021–2023

ECCV: European Conference on Computer Vision

2022

ACL: Annual Meeting of the Association for Computational Linguistics

2021–2023

EMNLP: Conference on Empirical Methods in Natural Language Processing

2021–2022

NAACL: North American Chapter of the Association for Computational Linguistics

2021–2022

WACV: IEEE Winter Conference on Applications of Computer Vision

2021–2023

ICRA: International Conference on Robotics and Automation

2019–2023

IROS: IEEE/RSJ International Conference on Intelligent Robots and Systems

2022

Journal Reviewer

RA-L: IEEE Robotics and Automation Letter

2020

MVAP: Springer Machine Vision and Applications

2020

Workshop / Tutorial Organizer

2nd ODRUM: Workshop on Open-Domain Reasoning under Multi-Modal Settings, [Website] CVPR'23

SERUM: Tutorial on Semantic Data Engineering under Multimodal Settings, [Website] WACV'23

1st ODRUM Workshop on Open-Domain Retrieval under Multi-Modal Settings, [Website] [YouTube]

CVPR'22

Organizer, 2021 Frontiers of V&L Seminar Series,

[Website], [YouTube] ASU

Founder, Summer Vision Reading Group,

[Website], multi-university initiative

Volunteer, 2019 Southwest Robotics Symposium,

Tempe AZ

Volunteer, International Conference on Machine Learning 2020,

Virtual

Advisor, ASU Machine Learning Club,

ASU

Award Reviewer, GPSA Teaching Award Reviewer

ASU

Mentor, Graduate Student Mentorship Program,

ASU

Student Mentor, Peer Mentorship Program

BITS Pilani

AWARDS AND RECOGNITION

Research Excellence Award, ASU GPSA

2022

Outstanding Mentor Award, ASU GPSA

2022

NeurIPS Top Reviewer	NeurIPS 2022
CVPR 2022 Doctoral Consortium	CVPR 2022
ICLR Best Reviewer	ICLR 2022
SCAI Doctoral Fellowship (ASU),	2020-2022
Engineering Graduate Fellowship, (ASU Engineering),	2020
ASU GPSA Travel Award	for WACV 2023
Graduate College Travel Award,	WACV'23 (declined), CVPR'22 (declined), ICCV'21, EMNLP'20,
ECCV'20	
IJCAI 2019 Doctoral Consortium ,	IJCAI 2019
Inducted, IEEE Eta Kappa Nu, Sigma Chapter,	CMU, 2017
National Talent Scholarship (Govt. of India),	2007–2015

REFERENCES

Yezhou Yang	Associate Professor	Arizona State University	yz.yang@asu.edu
Chitta Baral	Professor	Arizona State University	chitta@asu.edu
Rushil Anirudh	Research Scientist	Lawrence Livermore National Lab	anirudh1@llnl.gov
Eric Horvitz	Chief Scientific Officer	Microsoft	horvitz@microsoft.com
Heni Ben Amor	Associate Professor	Arizona State University	hbenamor@asu.edu