

# TEJAS GOKHALE

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🌐 [tejasgokhale.com](http://tejasgokhale.com)

🔍 [Google Scholar](#)

## RESEARCH INTERESTS

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I work on computer vision, machine learning, and natural language processing – very often at their wonderful intersection. My focus is “*semantic vision*”, i.e. building systems that assign meaning to scenes captured by cameras, with a mission to improve their robustness. My domain expertise lies in devising adversarial machine learning algorithms, semantic data engineering techniques, and evaluation protocols for out-of-distribution environments.

## EDUCATION

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

## RESEARCH EMPLOYMENT

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<b>Microsoft Research</b> Research Intern, <a href="#">Adaptive Systems and Interaction Group</a> <i>Mentors: Hamid Palangi (+Besa Nushi, Vibhav Vineet, Eric Horvitz)</i>	Summer 2022
<b>Lawrence Livermore National Laboratory</b> Research Scholar, <a href="#">Machine Intelligence Group</a> Mentor: Rushil Anirudh (+Jay Thiagarajan, Bhavya Kailkhura)	Summer 2021
<b>Lawrence Livermore National Laboratory</b> Research Scholar, <a href="#">Machine Intelligence Group</a> Mentor: Rushil Anirudh (+Jay Thiagarajan, Bhavya Kailkhura)	Summer 2020
<b>Snapchat Research</b> Research Intern, <a href="#">Computational Imaging Group</a> Mentors: Guru Krishnan + Shree Nayar	Summer 2018
<b>Carnegie Mellon University</b> Graduate Student Researcher, <a href="#">Image Science Lab</a> Advisor: Aswin Sankaranarayanan	2017–2018
<b>ST Microelectronics India</b> Intern, High Speed Links Group	Fall 2014

## PUBLICATIONS

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

## 🕒 Conference Proceedings

(5 ACL, 2 AACL, 2 EMNLP, 1 ECCV, 1 ICCV, 1 NAACL, 1 WACV)

- [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 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> AACL 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 2021
- [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 2021

[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)

[W1] *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

[W2] *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] *Covariate Shift Detection via Domain Interpolation Sensitivity*  
T. Gokhale, J. Feinglass, Y. Yang

NeurIPS 2022 Interpolate Workshop

[P2] *Poisoning of Image Classifiers via Selective Batch Sampling*  
E. Wisdom, T. Gokhale, Y. Yang

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

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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

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### 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

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### PhD Students

Ethan Wisdom (see publication [\[P2\]](#)) Ph.D. CS [current]

### MS (Thesis) Students

Maitreya Patel (see publication [\[C2\]](#)) M.S. CS [current]  
Huiliang Shao, M.S. CE 2022 [\[thesis\]](#)  
Abhishek Chaudhary (see publication [\[C3\]](#)) M.S. CS 2021 [\[thesis\]](#)

**Capstone Mentor**, mentored five B.S. CS students in projects on visual reasoning AY 2019-20

**Project Mentor**, CSE598 - Perception in Robotics, ASU Spring 2022

**Project Mentor**, CSE576 - Natural Language Processing, ASU Fall 2018

## SERVICE / LEADERSHIP

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### Program Committee / Conference Reviewer

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  
EMNLP: Conference on Empirical Methods in Natural Language Processing 2021-2022  
ACL: Annual Meeting of the Association for Computational Linguistics 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 Organizer

CVPR 2022

ODRUM: Workshop on Open-Domain Retrieval under Multi-Modal Settings, [\[Website\]](#) [\[YouTube\]](#)

**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,  
**Volunteer**, International Conference on Machine Learning 2020,  
**Advisor**, ASU Machine Learning Club,  
**Award Reviewer**, GPSA Teaching Award Reviewer  
**Mentor**, Graduate Student Mentorship Program,  
**Student Mentor**, Peer Mentorship Program

Tempe AZ  
 Virtual  
 ASU  
 ASU  
 ASU  
 BITS Pilani

## AWARDS AND RECOGNITION

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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
Graduate College Travel Award, (ASU),	for CVPR 2022, ICCV 2021, EMNLP 2020, ECCV 2020
IJCAI 2019 Doctoral Consortium,	IJCAI 2019
Inducted, IEEE Eta Kappa Nu, Sigma Chapter,	CMU, 2017
National Talent Scholarship (Govt. of India),	2007–2015

## REFERENCES

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Yezhou Yang	Associate Professor	Arizona State University	<a href="mailto:yz.yang@asu.edu">yz.yang@asu.edu</a>
Chitta Baral	Professor	Arizona State University	<a href="mailto:chitta@asu.edu">chitta@asu.edu</a>
Rushil Anirudh	Research Scientist	Lawrence Livermore National Laboratory	<a href="mailto:anirudh1@llnl.gov">anirudh1@llnl.gov</a>
Eric Horvitz	Chief Scientific Officer	Microsoft	<a href="mailto:horvitz@microsoft.com">horvitz@microsoft.com</a>
Heni Ben Amor	Associate Professor	Arizona State University	<a href="mailto:hbenamor@asu.edu">hbenamor@asu.edu</a>