

Joshua Feinglass

I'm a 4th year PhD student in the [ASU APG](#) lab advised by Yezhou Yang and working on **generalizable+robust** models and evaluations for the deployment of safe and reliable AI systems. More specifically, my thesis will focus on exploring novel representations of vision and language signals in order to improve and characterize **model performance in unfamiliar test domains** and identify and address **gameable aspects of well-established metrics**.


I am currently interning at [!\[\]\(919a2cb85b99741a73c0c31a427236a8_img.jpg\) Lawrence Livermore National Lab](#), where I am developing and publishing a State-of-the-Art and highly generalizable Zero-Shot Learning architecture with pre-trained vision pipelines, model regularization techniques, and automated external knowledge retrieval from natural language sources. I previously worked full-time as a Senior Digital Signal Processing Engineering at [!\[\]\(c9cd5a1c35167a83f09a35036fe5dcbd_img.jpg\) General Dynamics](#) where I primarily designed efficient algorithms for spectral decomposition, detection, characterization, and classification of communication and radar signals.

 joshuafeinglass.com

 Joshua.Feinglass@asu.edu

 Google Scholar

 Curriculum Vitae (PDF)

 Github

 LinkedIn

Education

Aug. 2019 — **Ph.D. in Computer Engineering w/ Machine Learning Specialization**

Dec. 2023 Arizona State University, Tempe, AZ

Advisor: Yezhou Yang

GPA: 3.78/4.00

Aug. 2016 — **M.S. in Computer Engineering w/ Machine Learning Specialization**

May 2018 Arizona State University, Tempe, AZ

GPA: 3.93/4.00

May 2017 — **B.S. in Computer Science**

Aug. 2015 Arizona State University, Tempe, AZ

GPA: 3.85/4.00

Work and Research Experience

May 2021 — **Lawrence Livermore National Lab**, Livermore, CA

Present *Graduate Research Intern, Computing at LLNL*

Mentor: Jayaraman Thiagarajan, Rushil Anirudh, Jayram Thathachar

Developed highly generalizable Zero-Shot Learning architecture with novel regularization techniques, a pre-trained vision pipeline, and external knowledge retrieval.

May 2018 — **General Dynamics Mission Systems**, Scottsdale, AZ

Dec. 2019 *Senior Digital Signal Processing Engineer, Trusted Space Solutions*

Created specifications for the standard operation and packet-level communication of devices in an edge computing framework. Developed algorithms for detecting communication and radar signals of interest and estimating their time and frequency characteristics for downstream decoding, classification, and localization tasks. Automated and optimized the creation of data compression pipelines for efficient communication channels and downstream data visualization tasks based on project requirements.

Jan. 2020 — **Arizona State University**, Tempe, AZ

Present *PhD Researcher, Active Perception Group*

Mentor: Yezhou Yang

Exploring concepts like knowledge representation/extraction, model generalization/robustness, and inference consistency/evaluation in Natural Language and Image Processing applications. Sole first author of a novel information theory based evaluation of captions for semantics and fluency presented in ACL 2021 (Oral). First author of two follow-on works which fundamentally redefine evaluation approaches in object detection and model generalization/robustness (an early draft of the robustness work will be presented in a NeurIPS 2022 workshop).

Jan. 2017 — **Arizona State University**, Tempe, AZ

Dec. 2017 *Master's Research Assistant, Image, Video, and Usability (IVU) Lab*

Mentor: Lina Karam

Built software frameworks using C, Python, OpenCV, Ada, and Matlab on a Linux platform for data acquisition and signal processing on the Soli radar device. Developed biometric and gesture detection/estimation algorithms using machine learning, sensor fusion, feature point tracking, beamforming, spectral analysis and pattern recognition algorithms on Photoplethysmographic (PPG) and Frequency-Modulated Continuous-Wave (FMCW) signal information.

May 2016 — **Honeywell**, Phoenix, AZ

Aug. 2016 *Intern, Test Services*

Mentor: Craig Stevens, Bob Apodaca

Refined MySQL/PHP/HTML/CSS/JavaScript-based web applications for employee records and schedules.

May 2015 — **Honeywell**, Phoenix, AZ

Aug. 2015 *Intern, Test Services*

Mentor: Craig Stevens, Bob Apodaca

Updated software and hardware logic programs for automated engine tests.

Publications

Covariate Shift Detection via Domain Interpolation Sensitivity

Tejas Gokhale*, Joshua Feinglass*, Yezhou Yang

NeurIPS 2022 Workshop INTERPOLATE (NIPS Workshop). New Orleans, LA, 2022.

 PDF  BibTeX * Authors contributed equally

SMURF: SeMantic and linguistic UndeRstanding Fusion for Caption Evaluation via Typicality Analysis

Joshua Feinglass, Yezhou Yang

*Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL).
Online, 2021.*

[PDF](#) [BibTeX](#)

Talks

Covariate Shift Detection via Domain Interpolation Sensitivity

Dec. 2022 NeurIPS 2022

Recognizing Unseen Classes with Part-Whole Prototypes

Aug 2022 Summer SLAM at Lawrence Livermore National Lab

Identifying Features of Out-of-Distribution Examples and their ties to Improved Evaluation of Generation Tasks

Apr. 2022 Cognition and Intelligence Lab at ASU

SMURF: SeMantic and linguistic UndeRstanding Fusion for Caption Evaluation via Typicality Analysis

Aug. 2021 ACL 2021