



Joshua Feinglass

I'm a 4th year PhD student developing **generalizable** and **robust** models to ensure the deployment of safe and reliable AI systems.

I work in the [ASU APG](#) lab where I'm advised by Yezhou Yang. I am currently interning at  Lawrence Livermore National Lab, where we're developing novel zero-shot deep learning architectures using image and natural language data sources.

I previously worked full-time as a Senior Digital Signal Processing Engineering at  General Dynamics where I designed algorithms for spectral decomposition, detection, characterization, and classification of communication and radar signals.

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 Google Scholar

 Curriculum Vitae (PDF)

 Github

 LinkedIn

Education

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

May 2024 Arizona State University, Tempe, AZ

Advisor: Yezhou Yang

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

May 2018 Arizona State University, Tempe, AZ

GPA: 3.93/4.00

Aug. 2012 — **B.S. in Electrical Engineering**

May. 2016 Arizona State University, Tempe, AZ

Barrett, the Honors College Graduate

Electrical Engineering Student Mentor

GPA: 3.85/4.00

Work and Research Experience

May 2023 — **Microsoft**, Redmond, WA

Aug. 2023 *Research Intern, Microsoft Research*

Mentor: Jack (Jay) Stokes, Scott Freitas

Developed model for anticipating and analyzing security incident evolution

- May 2022 — **Lawrence Livermore National Lab**, Livermore, CA
Dec. 2022 *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

Towards Addressing the Misalignment of Object Proposal Evaluation for Vision-Language Tasks via Semantic Grounding

Joshua Feinglass, Yezhou Yang

Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV).

2024.

 Project  BibTeX

Covariate Shift Detection via Domain Interpolation Sensitivity

Tejas Gokhale*, Joshua Feinglass*, Yezhou Yang

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

 Project  BibTeX * Authors contributed equally

SMURF: SeMantic and linguistic UnderRstanding 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.

 Project  BibTeX

Talks

Predicting the Evolution of Cybersecurity Incidents

Aug. 2023 Microsoft Research (Redmond)

Covariate Shift Detection via Domain Interpolation Sensitivity

Dec. 2022 NeurIPS 2022 Workshop INTERPOLATE

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 UnderRstanding Fusion for Caption Evaluation via Typicality Analysis

Aug. 2021 ACL 2021