

Damiano Marsili

PhD student in Computing and Mathematical Sciences, Caltech, Pasadena, USA
Email, Personal Website

EDUCATION

California Institute of Technology, Pasadena, USA
PhD Student, Computing and Mathematical Sciences

Sep 2023 — May 2028

Johns Hopkins University, Baltimore, USA
BS Computer Science
BA Mathematics

Aug 2020 — May 2023

PUBLICATIONS

No Labels, No Problem: Training Visual Reasoners with Multimodal Verifiers (PDF) (in review) Sep. 2025
Damiano Marsili, Georgia Gkioxari

- Developed VALOR, an annotation-free post-training framework that uses multimodal verifiers to jointly improve visual reasoning via reinforcement learning and visual grounding through automated hard-negative mining.

Same or Not? Enhancing Visual Perception in Vision-Language Models (PDF) (in review) Nov. 2025
Damiano Marsili, Aditya Mehta, Ryan Lin, Georgia Gkioxari

- Created TWIN, a large-scale dataset of 561K VQA queries designed to improve fine-grained understanding in VLMs.
- Introduced FGVQA, a benchmark suite of 12,000 queries that repurposes retrieval datasets for fine-grained VQA.
- Demonstrated that post-training on TWIN improves fine-grained understanding in VLMs, measured by an improvement of up to 19.3% on FGVQA, without compromising performance on general VQA.

Visual Agentic AI for Spatial Reasoning with a Dynamic API (PDF) CVPR 2025
Damiano Marsili, Rohun Agrawal*, Yisong Yue, Georgia Gkioxari*

- Designed a training-free agentic visual programming approach, VADAR, that dynamically generates new skills in Python and significantly outperforms previous visual programming methods on spatial reasoning in 3D.
- Introduced Omni3D-Bench, a benchmark for 3D understanding with complex queries involving multiple reasoning steps.

WORK EXPERIENCE

Amazon Robotics
Applied Science Intern

Arlington, USA
May 2023 — Sep 2023

- Engineered a large multimodal spatial reasoning dataset composed of over 300,000 grasp samples.
- Trained a Vision Language Model (VLM) to resolve spatial relationships for the task of targeted grasping.

Applied Physics Laboratory (JHU APL)
Research Assistant

Baltimore, USA
Aug 2022 — May 2023

- Worked on self-supervised training methods to train robots for gesture recognition using both synthetic and real data. Project funded by Army Research Labs (ARL).
- Leveraged novel techniques in transfer learning to mitigate the synthetic-to-real gap for gesture recognition.

Malone Center for Engineering in Healthcare, Johns Hopkins University
Research Intern

Baltimore, USA
Feb 2022 — May 2022

- Developed simulation environments used to train reinforcement learning agents for autonomous ventilators.
- Explored the impact of various medical insults on pulmonary compliance in the simulation environment.

TEACHING EXPERIENCE

Object Oriented Software Engineering
Teaching Assistant

Johns Hopkins University
Jan 2022 — May 2022

- Mentored a group of 7 students partaking in a semester-long software project.
- Arranged mock presentation sessions to provide feedback ahead of their final.

Learning Den
Mathematics & Computer Science Tutor

Johns Hopkins University
Sep 2021 — Jan 2022

- Helped two students improve from a B- to an A-/A in Calculus II and Calculus III respectively.
- Constructed a tailored curriculum of practice sets to reinforce concepts the students found challenging.