Maan Qraitem

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Education

Boston University — Boston, MA
Masters/Ph.D in Computer Science — *Sep 2020 – Now*

- **Advisors:** Kate Saenko and Bryan A. Plummer
- **Relevant Coursework:** Computer Vision, Deep Learning, Multimodal Learning, Advanced Optimization.

Colby College — Waterville, ME
B.A in Computer Science and Statistics; ***GPA: 3.97 (Summa Cum Laude)*** — *Sep 2016 – May 2020*

Selected Publications

Spurious Correlations in Vision-Language Models

- **Web Artifact Attacks Disrupt Vision Language Models**: **Maan Qraitem**, Piotr Teterwak, Kate Saenko, Bryan A. Plummer. ICCV 2025.
- **Vision-LLMs Can Fool Themselves with Self-Generated Typographic Attacks**: **Maan Qraitem**, Nazia Tasnim, Piotr Teterwak, Kate Saenko, Bryan A. Plummer. NeurIPS 2024 Workshop.
- **From Fake to Real: Pretraining on Balanced Synthetic Images to Prevent Bias**: **Maan Qraitem**, Kate Saenko, Bryan A. Plummer. ECCV 2024. *(Oral)*
- **Bias Mimicking: A Simple Sampling Approach for Bias Mitigation**: **Maan Qraitem**, Kate Saenko, Bryan A. Plummer. CVPR 2023.

Evaluation & Reasoning in Vision-Language Models

- **KiVA: Kid-inspired Visual Analogies for Testing Large Multimodal Models**: Eunice Yiu, **Maan Qraitem**, Charlie Wong, Anisa Noor Majhi, Yutong Bai, Shiry Ginosar, Alison Gopnik, Kate Saenko. ICLR 2025.
- **PersonaWeaver: Controllable Diversity Beyond Conventional Archetypes in Procedural Character Generation**: **Maan Qraitem**, Kate Saenko, Bryan A. Plummer. *1st PANDORA Workshop, EMNLP 2026*

Geospatial & Earth Observation

- **Detecting Key Land Surface Phenometrics with the Prithvi Foundation Model and Harmonized Landsat Sentinel-2 Data**: Paulo A Arevalo, **Maan Qraitem**, Sujit Roy. AGU 2025.
- Prithvi-EO: An Open-Access Geospatial Foundation Model...: AGU 2025. [40+ authors; contributed model adaptation pipelines for phenology forecasting and mining detection.]

Physics Informed Deep Learning

- **Bridging the gap: Machine learning to resolve improperly modeled dynamics**: **Maan Qraitem**, Dhanushka Kularatneb, Eric Forgostonc and M. Ani Hsieh. Phsyica D Journal 2020.
- **Real-time physics-based removal of shadows and shading from road surfaces**: Bruce A. Maxwell, Casey A. Smith, **Maan Qraitem**, Ross Messing Spencer Whitt, Nicolas Thien Richard M. Friedhoff. CVPR Workshop on Autonomous Driving 2019.

Work Experience

Boston University, Computer Science Department — Boston, MA
PhD Candidate — *Sept 2020 – Present*

- Research robustness and bias in vision-language models, with publications at ICCV, ICLR, CVPR, ECCV, and NeurIPS workshops.
- Developed novel training-time debiasing methods using synthetic data generation and sampling algorithms (ECCV 2024 Oral, CVPR 2023).
- Discovered new adversarial vulnerabilities in vision-language models, including self-generated typographic attacks and web artifact exploits (ICCV 2025, NeurIPS 2024 Workshop).
- Co-developed KiVA, a benchmark for evaluating analogical reasoning in multimodal models (ICLR 2025).

- Lead research on adapting NASA's geospatial foundation model **Prithvi** for large-scale phenology forecasting and mining activity detection in West Africa (NASA Collaboration, 2024–Present).
- Developed an ensemble framework combining Prithvi with lightweight baselines, improving performance in data-poor biomes (e.g., North American deserts).

Iteris Inc. Santa Ana, CA

Machine Learning Research Intern *May 2020 – Aug 2020*

- Designed multimodal fusion strategies to incorporate weather data into a spatiotemporal traffic forecasting system serving high-variability weather regions.
- Developed a CNN-based weather branch that improved prediction accuracy by ∼10% in regions with high weather variability.

GRASP Lab, University of Pennsylvania Philadelphia, PA

Research Intern *May 2019 – Aug 2019*

- Led the full research pipeline for learning data-driven corrections to PDE-based simulators (e.g., Navier–Stokes), including benchmark design, model development, training, and evaluation.
- Co-authored a journal paper demonstrating that our model architecture reliably bridges performance gaps across three PDE systems of varying complexity and physical settings.

Bigelow Lab / Colby College Waterville, ME

Research Intern *May 2018 – Aug 2018*

- Developed a biodiversity vision monitoring system for coral reefs using state-of-the-art deep learning classification and tracking systems.
- Supervised the collection of an image dataset of labeled fish species.

Colby College Waterville, ME

Research Intern *May 2017 – Aug 2017*

- Developed and implemented time series analysis algorithms (wavelet transform) to understand the behavior of circadian clocks in cancer cells.

Teaching

Guest Lecturer - Machine Learning CS542
Boston University, Spring 2023.
Introduced basic deep learning concepts such as backpropagation, neural network design, etc.

TA - Machine Learning CS542
Boston University, Spring 2021, Spring 2022.
Conducted labs and office hours where I covered foundational topics in machine learning such as neural networks, linear regression, SVMs, etc.

TA - Introduction to Applications Programming CS108
Boston University, Fall 2020.
Conducted labs and office hours where I covered foundational topics in computer science such as basic programming logic, recursion, etc.

TA - Introduction to Probability Theory
Colby College, Fall 2018.
Conducted labs and office hours where I covered foundational topics in probability theory such as basic combinatorics, random variables, probability distributions, Bayesian inference, hypothesis testing, confidence intervals, and linear regression.

Mentoring

AI4ALL Boston High School and Community College Students, 2024
Developed and taught an introductory AI course and supervised research projects.

Phoebe Chen Undergraduate Student, Boston University, 2023
Advised an analysis project of responsible use of ChatGPT for Journalism.

Professional Services

Reviewer
CVPR, ECCV, NeurIPS, ICML, WACV, AAAI.

Skills

Languages: Python, C, C++, Bash

ML/Vision: PyTorch, HuggingFace, OpenCV, NumPy, Pandas

Geospatial: Rasterio, GeoPandas

Tools: Git, Linux, Slurm, Docker, Weights & Biases

Awards & Achievements

Charles A. Dana Scholar Colby College

Rhodes Scholarship Finalist Colby College