Suzanne Petryk

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suziepetryk.com

Overview: I am currently a Ph.D. student in AI at UC Berkeley, graduating in May 2024. I work on improving the reliability and safety of multimodal models.

EDUCATION

University of California, Berkeley, Berkeley, CA **August 2019 - Present**

Current Ph.D. candidate in AI - Multimodal Vision + Language *Expected graduation May 2024*

GPA: 4.0. Co-advised by Prof. Trevor Darrell and Prof. Joseph E. Gonzalez at BAIR.

Cornell University, College of Engineering, Ithaca, NY **August 2015 - May 2019**

Bachelor of Science, Computer Science

GPA: 3.84 (Magna Cum Laude); Dean's List All Semesters; Tau Beta Pi Member (Engineering Honor Society)

Selection of coursework: Computer Vision (grad. course), ML Systems (grad. course), ML for Data Science, Foundations of AI, Algorithms, Discrete Structures (CS-focused math & probability), Quantum Mechanics

RESEARCH EXPERIENCE

Univ. of California, Berkeley, Graduate Student Researcher **August 2019 - present**

Advisors: Prof. Trevor Darrell, Prof. Joseph Gonzalez

- Thesis title: Reliable Multimodal Models; *e.g.*: How do we localize and reduce hallucinations in generated text? How do we measure and use uncertainty? How do we mitigate bias?

Meta (FAIR Labs), Visiting Researcher **January 2022 - January 2024**

Managers: Dr. Kate Saenko, Dr. Marcus Rohrbach

- Paper accepted at WACV 2024 (Poster) and ICCV 2023 Workshop (Oral) on reducing image caption hallucinations.
- Paper accepted at ECCV 2022 (Poster) on reliable visual question answering.

Univ. of California, Berkeley, Summer Undergraduate Program of Engineering Research **June - August 2017**

Advisor: Prof. Alexandre Bayen

- Collaborated on paper on use of loop detector data to estimate arterial traffic flow fundamental diagram.
- Presented research as plenary speaker for Ivy League Undergraduate Research Symposium in November 2017.

Univ. of Utah, Materials Research Science & Engineering Centers REU Program **June - August 2016**

Advisor: Prof. Taylor Sparks

- Collaborated on paper on effect of topological insulator crystal growth conditions on material properties.
- Won REU's poster competition and presented at 2017 National Council on Undergraduate Research.

SELECTED PUBLICATIONS

Suzanne Petryk, Joseph E. Gonzalez, Trevor Darrell, Kate Saenko.

How Much Do Language Priors Correlate With Image Caption Hallucinations?.

arXiv coming soon.

- We develop a method to densely label captions for hallucinations, and measure the correlation between hallucinations and language priors in multimodal VLMs.

Suzanne Petryk, Spencer Whitehead, Joseph E. Gonzalez, Trevor Darrell, Anna Rohrbach, Marcus Rohrbach.
Simple Token-Level Confidence Improves Caption Correctness.

WACV 2024, ICCV 2023 Workshop (Oral). `arxiv.org/pdf/2305.07021.pdf`

– We learn token-level confidences to achieve state-of-the-art object hallucination rates in image captioning.

Spencer Whitehead*, **Suzanne Petryk***, Vedaad Shakib, Joseph Gonzalez, Trevor Darrell, Anna Rohrbach, Marcus Rohrbach.
Reliable Visual Question Answering: Abstain Rather Than Answer Incorrectly.

ECCV 2022. `arxiv.org/pdf/2204.13631.pdf`

– We learned an uncertainty estimator to abstain on difficult VQA inputs.

Suzanne Petryk*, Lisa Dunlap*, Keyan Nasseri, Joseph E. Gonzalez, Trevor Darrell, Anna Rohrbach.
On Guiding Visual Attention with Language Specification.

CVPR 2022. `arxiv.org/pdf/2202.08926.pdf`

– We used CLIP to guide the attention of a CNN classifier away from biases.

EMPLOYMENT EXPERIENCE

Meta (FAIR Labs), Visiting Researcher **January 2022 - January 2024**

See entry above under RESEARCH EXPERIENCE.

SafelyYou, AI Intern (Startup using AI to improve safety at senior living communities) **July 2021 - May 2022**

– Implemented object detection models with PyTorch for automated fall detection.
– Implemented domain adaptation framework for adapting to new facilities.

Citrine Informatics, Data Science Intern (Startup using AI to accelerate materials R&D) **June - August 2018**

– Built framework in Scala to accelerate training data collection for ML model on materials datasets.
– Built and thoroughly documented ML pipeline from data collection to model testing. Used pipeline to predict probability of success for separate ML process as a form of meta-learning.

TEACHING

Computer Vision Graduate Student Instructor, Univ. of California, Berkeley **January 2024 - Present**
Graduate course (CS 280)

Computer Vision Teaching Assistant, Cornell University **January - May 2019**
Undergraduate course (CS 4670)

– Developed new machine learning project for students from scratch.

Operating Systems Teaching Assistant, Cornell University **August 2018 - December 2018**
Undergraduate course (CS 4410)

– Contributed the most answers to student questions on online Q&A forum for course out of 21 undergraduate TAs.

OUTREACH

AI4ALL, Instructor **August 2019, August 2020, August 2021**

– Taught high school students in week-long summer programs targeting underrepresented students in computer science
– Developed projects around reinforcement learning (2019) and GANs (2020, 2021)

Berkeley AI Research Undergraduate Mentoring Program, Mentor **August 2019 - August 2020**

Girls Who Code, Volunteer Teacher **September 2016 - May 2019**

– On a weekly basis, taught a class of 20 high school students fundamental computer science concepts with JavaScript
– Assisted individual students with course projects, including basic web design and Arduino programming

SPECIALIZED SKILLS

Programming: Python, Git, Emacs, Scala, C, JavaScript, Matlab
Maching Learning Frameworks: PyTorch, Tensorflow
Languages: Polish (conversational), Spanish (intermediate), Latin (basic)

MISCELLANEOUS

- Ran track & cross-country for about 8 years, including 2 years on the Varsity Division-I team at Cornell University. Competed at the New York State and National championships.
- I enjoy climbing, hiking, reading, skiing, and basic woodworking.