Suzanne Petryk

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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

- Generally focused on reliability of 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, 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, and basic woodworking.