

Josh Myers-Dean

Ph.D. Student, University of Colorado Boulder

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Education

August 2021 Present	University of Colorado Boulder Ph.D. student in Computer Science	Colorado, USA
Sept. 2016 June 2021	Western Washington University B.S., Computer Science, Minor in Mathematics	Washington, USA

Experience

Nov. 2024 May 2024	Adobe Research Vision Language Lab [🌐] <i>Research Intern / Mentor: Dr. Brian Price</i> Developed a semi-supervised framework for robust and consistent interactive segmentation. Developing an autoregressive multimodal large language model (LLM) framework for efficient hierarchical segmentation.	Remote, USA
Present August 2021	University of Colorado Boulder Image and Video Computing Group [🌐] <i>Graduate Research Assistant / Advisor: Dr. Danna Gurari</i> Developing algorithms to allow users to control the granularity of responses from vision-language models, few-shot learning, and hierarchical segmentation.	Colorado, USA
August 2023 May 2023	Allen Institute for Artificial Intelligence PRIOR Team [🌐] <i>Research Intern / Mentors: Dr. Favyen Bastani, Dr. Aniruddha Kembhavi</i> Worked on developing self and unsupervised algorithms for temporal land change detection in remote sensing imagery.	Washington, USA
Nov. 2022 May 2022	Adobe Research Media Intelligence Lab [🌐] <i>Research Intern / Mentor: Dr. Brian Price</i> Developed a novel task of gesture-agnostic, context free interactive segmentation where algorithms only require a marking from a user. Proposed a novel evaluation metric to quantify how much an algorithm improved a previous segmentation.	Remote, USA
Sept. 2021 August 2020	Pacific Northwest National Laboratory Applied Statistics Team [🌐] <i>Research Intern / Mentor: Dr. Karl Pazdernik</i> Analyzed the relationship between ASR results and audio representations to identify poor audio segments for downstream tasks (e.g., speaker diarization). Leveraged zero-shot learning for entity disambiguation.	Remote, USA
June 2021 April 2019	Western Washington University Wehrwein Research Group [🌐] <i>Undergraduate Research Assistant / Mentor: Dr. Scott Wehrwein</i> Used per-pixel features from deep neural networks trained on semantic segmentation to improve lower-level computer vision and image processing tasks such as range masking, seam carving, and graph cuts.	Washington, USA
June 2021 June 2020	Western Washington University Jagodzinski Research Group [🌐] <i>Undergraduate Research Assistant / Mentor: Dr. Filip Jagodzinski</i> Developed a computational software suite, Domain Analysis and Motif Matcher (DAMM), designed to analyze peptide-binding cleft sequence identity in comparison to human PDZ domains.	Washington, USA

Publications

S=In Submission, C=Conference, W=Workshop, J=Journal, P=Preprint

- [C.4] **SPIN: Hierarchical Segmentation with Subpart Granularity in Natural Images**
[Josh Myers-Dean](#), Jarek Reynolds, Brian Price, Yifei Fan, Danna Gurari
European Conference on Computer Vision [ECCV '24]
- [W.2] **Interpreting COVID Lateral Flow Tests' Results with Foundation Models**
Stuti Pandey, [Josh Myers-Dean](#), Jarek Reynolds, Danna Gurari
Domain adaptation, Explainability, Fairness in AI for Medical Image Analysis at CVPR 2024 [CVPR DEF-AI-MIA@CVPR '24]
- [C.3] **Interactive Segmentation for Diverse Gesture Types Without Context**
[Josh Myers-Dean](#), Yifei Fan, Brian Price, Wilson Chan, Danna Gurari
IEEE Winter Conference on Applications in Computer Vision [WACV '24]

- [C.2] **Computer Vision for International Border Legibility**
Trevor Ortega, Thomas Nelson, Skyler Crane, [Josh Myers-Dean](#), Scott Wehrwein
IEEE Winter Conference on Applications in Computer Vision [WACV '23]
- [P.1] **Generalized few-shot semantic segmentation: All you need is fine-tuning**
[Josh Myers-Dean](#), Yinan Zhao, Brian Price, Scott Cohen, Danna Gurari
arXiv preprint [arXiv:2307.10518]
- [C.1] **Towards modeling student engagement with interactive computing textbooks: An empirical study**
David H Smith IV, Qiang Hao, Christopher D Hundhausen, Filip Jagodzinski, [Josh Myers-Dean](#), Kira Jaeger
Proceedings of the 52nd ACM Technical Symposium on Computer Science Education [SIGCSE '21]
- [J.2] **Domain Analysis and Motif Matcher (DAMM): A Program to Predict Selectivity Determinants in Monosiga brevicollis PDZ Domains Using Human PDZ Data**
Haley A Wofford*, [Josh Myers-Dean](#)*, Brandon A Vogel, Kevin Alexander Estrada Alamo, Frederick A Longshore-Neate, Filip Jagodzinski, Jeanine F Amacher (* = Equal Contribution)
Molecules. 2021; 26(19):6034 [Molecules]
- [W.1] **Semantic Pixel Distances for Image Editing**
[Josh Myers-Dean](#) and Scott Wehrwein
New Trends in Image Restoration and Enhancement Workshop at CVPR 2020 [NTIRE@CVPR '20]
- [J.1] **PETRA: Drug Engineering via Rigidity Analysis**
Sam Herr*, [Josh Myers-Dean](#)*, Hunter Read*, Filip Jagodzinski (* = Equal Contribution)
Molecules 25(6):1304 [Molecules]

Talks

“Segmentation”

- > [C.3, C.4] - The Many Hats of Pixels. - Carnegie Melon University April 2024
- > Guest Lecture - Graduate Computer Vision, University of Colorado Boulder May 2023
- > Guest Lecture - Designing for Interactions, University of Colorado Boulder July 2024
- > [C.3] - BAIVC Student Symposium [🌐] February 2023

“NLP”

- > Giving Context: Entity Classification from a Single Name - PNNL Virtual Research Symposium August 2021
- > Robust Entity Tagging in the Wild: - PNNL Virtual Research Symposium Dec. 2020

Honors and Awards

Bell Family Endowed CS Scholarship, 2024 CU Boulder Computer Science

Outstanding Service, 2023/2024 CU Boulder Computer Science

Best Work in Progress, 2023 CU Boulder Computer Science

2x Category winner, Overall honorable mention, 2022 Adobe Code Quality Jam

Graduate Research Fellowship Program, 2021 - Present National Science Foundation

Early Career Professional Development Fellowship, 2021 CU Boulder Computer Science

James Lee Johnson Memorial Endowment, 2020 WWU Computer Science

1st Place - Biosurveillance Mobile App. Dev. Competition, 2020 PNNL

Outreach

- Creative Communities Research Group** *Volunteer* May'23 - Present
- > Developing and administering computational creative tinkering activities to engage high school aged students in computation.
- ITLP K-12** *Curriculum Creator* August'22 - Present
- > Design micro:bit activities to engage middle school students in computer science and computer vision concepts.
- Teen Science Cafe** *Invited Speaker* February'22
- > Presented my path to becoming a graduate student and administered activities relating machine learning to web accessibility to high school students in Lafayette, CO.
- Sunnyland Elementary School "Hour of Code"** *Facilitator* October'19
- > Assisted elementary school students in designing programs using the Scratch programming language.

Software and Open Source Contributions

- > **SPIN Toolkit:** API for efficiently loading and evaluating the SPIN dataset [C.4]. [commits](#)
- > **DIG Toolkit:** API for efficiently loading and evaluating the DIG dataset [C.3]. [commits](#)
- > **PyDMD:** Tutorial on Compressed Dynamic Mode Decomposition for background modeling [commits](#)
- > **DAMM:** Computational biology toolkit for aligning PDZ domains against target proteomes. [J.2]. [commits](#)

Mentorship

- Mo Zhou (Computer Science Masters Student)** August 2024-Present
- Stuti Pandey (Computer Science Masters Student) [W.2]** August 2023-May 2024

Academic Service

- Organizer** VizWiz Grand Challenge Workshop at CVPR (2024, 2025)
- Reviewer** CVPR '23, WACV '24, CVPR '24, ECCV '24, WACV '25