

Sara Beery

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EDUCATION

EXPECTED 2022 Doctorate of Philosophy in COMPUTING AND MATHEMATICAL SCIENCES
California Institute of Technology, Pasadena, CA
Advisor: Pietro Perona | Computational Vision Lab
Research Areas: Computer Vision for Biodiversity Monitoring and Conservation,
Fine-Grained Categorization, Object Detection, Generalization

JUNE 2016 Bachelor of Science in ELECTRICAL ENGINEERING
Bachelor of Science in MATHEMATICS
Seattle University, Seattle, WA
Computer Engineering and Applied Mathematics Specializations
Computer Science Minor
Research Areas: Computer Vision, Image Processing,
Near-shore Ocean Phenomena, Epidemiology

FELLOWSHIPS, SCHOLARSHIPS, AWARDS, AND HONORS

2021 Caltech Engineering and Applied Science Division DEI New Horizons Award
Caltech Computing and Mathematical Sciences Gradient of Change DEI Award
University of Chicago Center for Data and Computing Rising Star in Data Science

2020-21 Amazon/Caltech AI4Science Fellowship
PIMCO Fellowship in Data Science

2016-20 National Science Foundation Graduate Research Fellowship

2015-16 Center for Environmental Justice and Sustainability Research Fellowship
SWE Wanda Munn Scholarship
American Women in Science Scholarship
Seattle University Bannan Scholarship

2015 Mathematical Contest in Modeling Honorable Mention

2014-15 General Electric Women's Network Scholarship
American Women in Science Scholarship
Seattle University Bannan Scholarship

2004 & 2005 National Latin Exam Gold Medal

PAPERS AND PATENTS

(*denotes equal contribution)

Beery (2021). Scaling Biodiversity Monitoring for the Data Age. Invited Feature for ACM XRDS Crossroads Special Issue on Sustainability.

Beery*, Cole*, Winner, Parker, Perona (2021). Species Distribution Modeling for Machine Learning Practitioners: A Review. In Proceedings of the ACM SIGCAS Conference on Computing and Sustainable Societies.

Kulits, Wall, Bedetti, Henley, **Beery** (2021). ElephantBook: A Semi-Automated Human-in-the-Loop System for Elephant Re-Identification. In Proceedings of the ACM SIGCAS Conference on Computing and Sustainable Societies.

Tuia, Kellenberger*, **Beery***, Costelloe, Zuffi, Risse, Mathis, Mathis, Langvelde, Burghardt, Kays, Klink, Wikelski, Couzin, van Horn, Crofoot, Stewart, Berger-Wolf (2021). Seeing Biodiversity: Perspectives in Machine Learning for Wildlife Conservation. In submission (invited) to Nature Communications.

Van Horn, Cole, **Beery**, Wilber, Belongie, & Mac Aodha (2021). Benchmarking Representation Learning for Natural World Image Collections. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. (Oral)

Koh, Sagawa, Marklund, Xie, Zhang, Balsubramani, Hu, Yasunaga, Phillips, **Beery**, Leskovec, Kundaje, Pierson, Levine, Finn, & Liang (2021). WILDS: A Benchmark of in-the-Wild Distribution Shifts. In Proceedings of the International Conference on Machine Learning. (Oral)

Norouzzadeh, Morris, **Beery**, Joshi, Jojic, & Clune. (2021). A deep active learning system for species identification and counting in camera trap images. In Methods in Ecology and Evolution. doi:10.1111/2041-210X.13504

Beery, Wu, Rathod, Votel, & Huang (2020). Context R-CNN: Long Term Temporal Context for Per-Camera Object Detection. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (pp. 13075-13085).

Beery, Liu, Morris, Piavis, Kapoor, Joshi, Meister, & Perona. (2020). Synthetic examples improve generalization for rare classes. In The IEEE Winter Conference on Applications of Computer Vision (pp. 863-873).

Beery, Van Horn, & Perona. (2018). Recognition in terra incognita. In Proceedings of the European Conference on Computer Vision (ECCV) (pp. 456-473).

Miguel, **Beery**, Flores, Klemesrud, & Bayraksicmith. (2016). Finding areas of motion in camera trap images. In 2016 IEEE international conference on image processing (ICIP) (pp. 1334-1338). IEEE.

Beery, Loukili, Borgstadt, Rich, Kise, & Davis. (2016), Methods and apparatus to track a blade, US Patent Application No. US20200217660A1, European Patent Application No. EP3290592A1

INVITED TALKS & PANELS

“Closing the Gap Between Academic Research and Real-World Impact,” Invited Speaker for Queer in AI at NeurIPS (2021).

“AI-Assisted Biodiversity Monitoring,” Data Science Frontiers Seminar at the African Institute for Mathematical Sciences (2021).

“AI-Assisted Biodiversity Monitoring,” Guest Lecture at Princeton AI4All (2021).

“Computer Vision for Global-Scale Biodiversity Monitoring - Scaling Geospatial and Taxonomic Coverage Using Contextual Clues,” Seminar for Berkeley AI + Climate Change (2021).

“Computer Vision for Global-scale Biodiversity Monitoring,” Invited panelist for Caltech i-STEM Initiative - introducing low-income public high school students to academic research.

“AI-Assisted Biodiversity Monitoring,” Invited talk and panelist, Session on Leveraging AI to Extend Specimen Networks, Fifth annual Digital Data in Biodiversity Research Conference (2021).

“Out in Technology and Math,” Invited Panelist at UC San Diego (2021).

“Computer Vision for Biodiversity Monitoring: scaling geospatial and taxonomic coverage using contextual clues,” Keynote, CARE-AI and Biodiversity Institute Joint Seminar Series at University of Guelph (2021).

“CV for Biodiversity Monitoring,” Tech Talk at AI for Mankind (2021).

“CV for Biodiversity Monitoring,” Seminar for the joint Mathis labs at EPFL (2021).

“Deep Learning & Camera Traps,” Plenary Talk at Imagineecology Workshop (Deep Learning pour le traitement et l’analyse d’images et de sons en écologie) at Le GDR EcoStat (2020).

“Towards global-scale biodiversity monitoring: scaling geospatial and taxonomic coverage using contextual clues,” Computational Sustainability (CompSust) Doctoral Consortium (2020).

“Improving computer vision for camera traps: Leveraging practitioner knowledge to build better models,” Ecological Society of America Annual Meeting (2020).

“Improving Computer Vision for Camera Traps: Leveraging Practitioner Insight to Build Solutions for Real-World Challenges,” CompSust Open Graduate Seminar (2020).

“Animal Re-ID from Camera Traps: Can We Deal with Low-Quality Data?,” Deep Learning Methods and Applications for Animal Re-Identification at WACV (2020), Aspen, Colorado.

“Computer Vision for Biodiversity Monitoring and Conservation,” Yale Center for Biodiversity and Global Change Seminar (2020), with Elijah Cole

“AI for Camera Traps - Challenges, Best Practices, Benchmarks, and De-Siloing Data,” Seminar at ICRAF (2020), Nairobi, Kenya.

“AI for Camera Traps - Challenges, Best Practices, Benchmarks, and De-Siloing Data,” WILD-LABS Virtual Meetup on Camera Trapping (2019).

“Long-term context for species detection,” Camera Trap Technology Symposium (2019), Mountain View, California.

“Camera traps: generalization, sample efficiency, best practices, benchmarks, and de-siloing data,” Computer Vision for Wildlife Conservation Workshop at ICCV (2019), Seoul, Korea.

“What’s Next in Computer Vision for Wildlife Monitoring,” Panelist, Workshop of Computer Vision for Wildlife Monitoring at ICCV (2019), Seoul, South Korea

“Computer Vision for Camera Traps,” Symposium on AI for Conservation (2019), USC Center for AI in Society, Los Angeles, CA

“An investigation into bio-inspired sonar search performance” Seminar for NASA-JPL Robotics Group (2017), Los Angeles, CA.

“Identifying snow leopards in camera trap images,” Seattle University Mathematics S.M.A.R.T. Talk Series (2016), Seattle, WA.

“Technological advances in farming that made a city girl fall in love with agriculture,” Region J Society of Women Engineers Conference (2015), Olympia, WA.

FUNDING

*Note that for the grants in this section, first author is research lead, last author is the PI

Lanzini, E., van Gemert, J., Bruintjes, R., Lengyel, A., and **Beery, S.**, *Using Style Transfer to Improve Realness of Synthetic Camera Trap Images*, Microsoft AI for Earth Grant, awarded December 2020, \$10,000 in-kind

Beery, S., Cole, E., and Perona, P., *Automated Ecological Monitoring - Learning from Context*, Resnick Sustainability Institute, awarded October 2020, \$120,000

Shippee, T., Cole, E., Rubenstein, D., and **Beery, S.** *Investigating efficient transfer of ML species identification models from nearby regions.* Microsoft AI for Earth Grant, awarded September 2020, \$10,000 in-kind

Kulits, P., Wall, J., Hahn, N., Lefcourt, J., Parham, J., Holmberg, J., Berger-Wolf, T., Stere, T., and **Beery, S.**, *Wildbook for Elephants with the Mara Elephant Project*, Microsoft AI for Earth Grant, awarded May 2020, \$10,000 in-kind

Beery, S., *A Network of 100 Camera Traps to Estimate Grevy's Zebra Population in Comparison to the Great Grevy's Rally*, Google AI for Nature and Society Grant, awarded January 2020, \$15,000 + \$5,000 in-kind

Kulits, P., **Beery, S.**, Van Horn, G., Young, E., and Perona, P. *Automated Salmonid Counting in Sonar Data*, Amazon AWS Grant, awarded July 2019, \$80,000 + \$30,000 in-kind

Beery, S., *The Microsoft MegaDetector - Robust Animal Detection in Global Camera Trap Data*, Microsoft AI for Earth Grant, awarded August 2018, \$10,000 in-kind

MENTORSHIP

FALL 2020 PRESENT	<p>Postbac Research Mentor</p> <p>BUILDING EFFICIENT METHODS FOR GENERALIZING COMPUTER VISION MODELS TO NEW REGIONS OF THE WORLD, Caltech</p> <p>Curating and efficiently labeling over a year of data collected from our network of cameras at Mpala Research Centre using model distillation, domain adaptation, and active learning.</p>
FALL 2020 PRESENT	<p>Graduate Research Mentor</p> <p>IMPROVING GENERALIZATION WITH SYNTHETIC DATA, TU Delft</p> <p>Co-advising 4 TU Delft computer vision masters students alongside Prof. Jan van Gemert. We are investigating several extensions to my 2020 WACV paper using synthetic data to improve generalization for rare classes. These include training GANs to encourage more overlap between the synthetic and real data in feature space, performing panoptic segmentation on the camera trap data and augmenting with PanDA, and testing data-efficient GANs to directly synthesize new imagery, as opposed to relying on a graphics engine. First paper accepted to CV4Animals at CVPR 2021, next paper in submission to BMVC 2021.</p>
SUMMER 2020 PRESENT	<p>Graduate Research Mentor</p> <p>CONTEXT-BASED WEAKLY-SUPERVISED OBJECT SEGMENTATION IN STATIC CAMERAS, Caltech</p> <p>Mentoring an incoming PhD student in her first research project at Caltech. We are investigating using temporal context and bounding boxes as weak supervision to train accurate segmentation models for camera trap data.</p>
SUMMER 2020 PRESENT	<p>Undergraduate Research Mentor</p> <p>BUILDING AN AUTOMATED ELEPHANT RE-IDENTIFICATION DATABASE, Caltech</p> <p>Developed a joint project between Mara Elephant Project, Vulcan AI Center for Impact, and WildMe to build the first WildBook for Elephants with API-to-API support for Vulcan's EarthRanger. Hired an excellent, motivated undergrad and mentored him through the software development and the computer vision research for automated re-identification based on ear curvature and attributes. First paper on the project accepted to ACM COMPASS 2021.</p>
SUMMER 2019 PRESENT	<p>Undergraduate Research Mentor</p> <p>AUTOMATING SALMONID ESCAPEMENT ESTIMATION FROM SONAR DATA, Caltech</p> <p>Co-developed a joint project between Trout Unlimited and the Alaska Department of Fish and Game to build a detection, tracking, and length estimation system for salmonid species in ARIS sonar imagery. Co-mentored two undergraduate students in the development of a prototype system. First paper on the project accepted to Climate Change AI at NeurIPS 2020.</p>
SUMMER 2020	<p>Undergraduate Research Mentor</p> <p>FRESHMAN SUMMER RESEARCH INSTITUTE, Caltech</p> <p>Mentored an incoming Caltech freshman through her first research project. Designed and managed a conservation-focused computer vision research project on the effect of image quality on accuracy.</p>
JANUARY 2017 TO PRESENT	<p>Undergraduate Academic Mentor</p> <p>CALTECH WOMEN MENTORING WOMEN, Caltech</p> <p>Mentoring 1-2 undergraduate women in computer science per year, helping them to navigate their academic careers.</p>

WORKSHOP PAPERS AND ABSTRACTS

Beery, S., Agarwal, A., Cole, E., & Birodkar, V. (2021). The iWildCam 2021 Competition Dataset. The Eighth Fine-Grained Visual Categorization Workshop at CVPR.

Beery, S*. & Bondi, E*. (2021). Can poachers find animals from public camera trap images?. CV4Animals Workshop at CVPR.

Lanzino, E., & Beery, S. (2021). Image-to-Image Translation for Synthetic Samples of Rare Classes. CV4Animals Workshop at CVPR.

Kulits, P., Pan, A., Van Horn, G., Beery, S., Young, E., & Perona, P. (2020). Automated Salmonid Counting in Sonar Data. Climate Change AI Workshop at NeurIPS.

Koh, P. W.*, Sagawa, S.*, Marklund, H., Xie, M., Zhang, M., Balsubramani, A., Phillips, R., Beery, S., Kundaje, A., Pierson, E., Levine, S., Finn, C., & Liang, P. (2020). WILDS: A Survey and Benchmark of in-the-Wild Distribution Shifts. Workshop on ML Retrospectives, Surveys & Meta-Analyses at NeurIPS.

Beery, S., Wu, G., Rathod, V., Votel, R., & Huang, J. (2020). Context R-CNN: Long Term Temporal Context for Per-Camera Object Detection. 4th Annual Digital Data Conference, Integrated Digitized Biocollections (iDigBio).

Beery, S., Cole, E., & Gjoka, A. (2020). The iWildCam 2020 Competition Dataset. The Seventh Fine-Grained Visual Categorization Workshop at CVPR.

Beery, S., Wu, G., Rathod, V., Votel, R., & Huang, J. (2020). Context R-CNN: Long Term Temporal Context for Per-Camera Object Detection. The Women in Computer Vision Workshop at CVPR.

Robertson, T., Belongie, S., Hartwig, A., Kaeser-Chen, C., Zhang, C., Tan, K.C., Liu, Y., Brulé, D., Deltheil, C., Loarie, S. Van Horn, G., Mac Aodha, O., Beery, S., Perona, P., Copas, K., & Waller, J. (2019). Training machines to identify species using gbif-mediated datasets. Biodiversity Information Science and Standards.

Beery, S., Morris, D., Yang, S., Simon, M., Norouzzadeh, A., & Joshi, N. (2019). Efficient pipeline for automating species id in new camera trap projects. Biodiversity Information Science and Standards, 3, e37222.

Beery, S., Morris, D., & Yang, S. (2019). Efficient Pipeline for Camera Trap Image Review. Data Mining and AI for Conservation Workshop at Knowledge Discovery and Data (KDD).

Beery, S., Morris, D., & Perona, P. (2019). The iWildCam 2019 Challenge Dataset. The Sixth Fine-Grained Visual Categorization Workshop at CVPR.

Beery, S., Van Horn, G., & Perona, P. (2018). Recognition for Camera Traps in Unknown Territory. AI for Wildlife Conservation Workshop at the Federated Artificial Intelligence Meeting (FAIM).

Beery, S., Van Horn, G., Mac Aodha, O., & Perona, P. (2018). The iWildCam 2018 Challenge Dataset. The Fifth Fine-Grained Visual Categorization Workshop at CVPR.

Edwards, J. R., Beery, S., & Railey, K. E. (2016). An investigation into bio-inspired sonar search performance. The Journal of the Acoustical Society of America, 140(4), 2967-2967.

Beery, S., Flores, E., & Miguel, A. (2013). Snow Leopard Identification Using Digital Image Processing. Murdock College Science Research Conference.

DATASETS, MODELS, AND COMPETITIONS

JUNE 2021	<p>iNat 2021 and NeWT</p> <p>iNat 2021 contains 2.7M images of 10,000 species collected from the iNaturalist community science platform. NeWT is a suite of challenging natural world binary classification tasks that go beyond standard species classification, such as age, sex, and counts. These two datasets allow us to explore questions related to large-scale representation and transfer learning in the context of fine-grained categories.</p>
JUNE 2021	<p>The iWildCam 2021 Competition</p> <p>Fourth iWildCam competition, focused on counting individuals of 786 different species across sequences of imagery in novel camera trap deployments from 11 countries, with multi-modal data from iNaturalist and paired satellite imagery.</p>
DECEMBER 2020	<p>WILDS</p> <p>Open sourced domain adaptation benchmark dataset, captures real-world distribution shifts across diverse applications including camera trap imagery.</p>
JUNE 2020	<p>Context R-CNN</p> <p>Open sourced object detection architecture released in the Tensorflow Object Detection API, uses attention to aggregate information across long time horizons.</p>
JUNE 2019	<p>The iWildCam 2020 Competition</p> <p>Third iWildCam competition, focused on classification of 786 different species in novel camera trap deployments from 11 countries, with multi-modal data from iNaturalist and paired satellite imagery.</p>
JUNE 2019	<p>The iWildCam 2019 Competition</p> <p>Second iWildCam competition, focused on open-set classification of species in camera trap images in Idaho, with training data from camera traps in the American Southwest and multi-modal data from iNaturalist and Microsoft AirSim.</p>
JANUARY 2019	<p>The MegaDetector (v1-v4)</p> <p>Open sourced Faster R-CNN model trained to detect animals, humans, and vehicles in camera trap data released in the Microsoft AI for Earth CameraTrap GitHub repository and used in the data processing workflows of over 30 conservation organizations globally.</p>
AUGUST 2018	<p>The Caltech Camera Traps Dataset</p> <p>Publicly released camera trap dataset covering locations and species from the American Southwest with species and bounding box labels, curated from data provided by the USGS and NPS and hosted on LILA.science.</p>
JUNE 2018	<p>The iWildCam 2018 Competition</p> <p>First iWildCam competition, focused on classifying animal/blank images in novel camera trap deployments.</p>

SELECTED MEDIA

Leveraging Temporal Context for Object Detection, Google AI Blog, June 2020

CNNs Catch Animals in the Wild, Communications of the ACM, April 2020

The Big Picture, Caltech Breakthrough Campaign, November 2018

Internships Ahoy! with Kirsten Bray, Wei Dai and Sara Beery, Microsoft Research Podcast, September 2018

SERVICE

JUNE 2021	Co-organizer and Competition Chair The 8th Fine-Grained Visual Categorization Workshop CVPR 2021, Nashville, TN
SEPTEMBER 2020 TO PRESENT	Community of Practice Co-Leader Remote Sensing/Machine Learning for Wildlife Surveys U.S. Fish and Wildlife Service Branch of Migratory Bird Surveys
MARCH 2020 TO PRESENT	Steering Committee Member Resnick Sustainability Institute Quantitative Ecology Initiative CALTECH, Pasadena, CA
MARCH 2020	Co-organizer AI for Animal Re-ID Workshop WACV 2020, Aspen, CO
FEBRUARY 2020	Co-organizer Visipedia Research Group Yearly Meeting New York, NY
JUNE 2019	Organizing Committee Member Seventh Fine Grained Visual Categorization Workshop CVPR 2020, Virtual
NOVEMBER 2019	Organizing Committee Member Camera Trap Technology Symposium Mountain View, CA
JUNE 2019	Organizing Committee Member Sixth Fine Grained Visual Categorization Workshop CVPR 2019, Salt Lake City, Utah
FEBRUARY 2019	Co-organizer Visipedia Research Group Yearly Meeting San Diego, CA
JUNE 2018	Organizing Committee Member Fifth Fine Grained Visual Categorization Workshop CVPR 2018, Long Beach, CA
FEBRUARY 2018	Co-organizer Visipedia Research Group Yearly Meeting Pasadena, CA

PROGRAM COMMITTEES

CV4Animals Workshop, CVPR 2021

EarthVision: Large Scale Computer Vision for Remote Sensing Imagery, CVPR 2021

Webly-Supervised Fine-Grained Workshop, ACCV 2020

AI for Social Good Workshop, 2020, Harvard Center for Research on Computation and Society

Emerging Track on AI for Social Impact, AAAI 2020

Computer Vision for Wildlife Conservation Workshop, ICCV 2019

Data Mining and AI for Conservation Workshop, KDD 2019

AI for Wildlife Conservation Workshop, IJCAI 2018

REVIEWING

NeurIPS

ICLR

ICML

WACV

Special Track on AI for Social Impact, AAAI

ISPRS Journal of Photogrammetry and Remote Sensing

Methods in Ecology and Evolution

Journal of Mammalogy

Mammalian Biology

Ethology

Remote Sensing in Ecology and Conservation

ISPRS Journal of Photogrammetry and Remote Sensing

Ecosphere

Ecological Informatics

PeerJ Computer Science

PROFESSIONAL EXPERIENCE

MAY 2019 TO PRESENT	<p>Research Intern, Student Researcher, Wildlife Insights AI Team GOOGLE RESEARCH, Seattle, WA & Los Angeles, CA <i>Context-aware Object Detection</i></p> <p>Building a weakly-supervised multi-modal approach for monitoring the urban forest. Developing context-aware object detection architectures for object detection in static cameras, with work published at CVPR 2020 and the Ecological Society of America Meeting 2020. Working with the Wildlife Insights AI team towards developing a fully automated species detector for camera traps in order to enable widespread, scalable wildlife monitoring.</p>
JANUARY 2020 TO FEBRUARY 2020	<p>Field Work MPALA RESEARCH CENTER, Laikipia, Kenya <i>Placing and managing a network of 100 camera traps</i></p> <p>Planned, budgeted, raised funds (\$25K), and executed field-based ecological data collection. This data will be used to investigate bias in camera trap placement and visual re-identification accuracy vs human ground truth (from the Great Grevy's Rally 2020).</p>
SUMMER 2018	<p>Research Intern MICROSOFT RESEARCH & AI FOR EARTH, Seattle, WA <i>Computer Vision and Generalization</i></p> <p>As one of Microsoft AI for Earth's first interns, I jump-started their camera trap workflow and built and open-sourced the MegaDetector, a globally-generalizeable class-agnostic animal detector for camera trap data. We also investigated the use of synthetic data to improve generalization for rare classes, leading to publications at BiodiversityNext 2019, Data Mining and AI for Conservation at KDD 2019, WACV 2020, and a journal paper in Methods in Ecology and Evolution in October 2020.</p>
JUNE 2013 TO JUNE 2016	<p>Research Assistant SEATTLE UNIVERSITY, Seattle, WA <i>Image Processing and Computer Vision</i></p> <p>Collaborated with Ph.D. Agnieszka Miguel using digital image recognition techniques and machine learning algorithms to identify snow leopards within sets of camera trap photos. Developed a method of mathematically modeling individual spot patterns that is robust to scale and orientation shifts. Presented results at the 2016 IEEE International Conference in Image Processing</p>
SUMMER 2016	<p>Summer Research Internship MIT LINCOLN LABORATORY, Boston, MA <i>Advanced Undersea Systems and Tecnology</i></p> <p>Worked on implementation of a sonar-based biomimetic ocean floor search procedure for UAVs. Results published in the 2016 Journal of the Accoustical Society of America</p>
SUMMER 2015	<p>Machine Automation Engineering Co-Op JOHN DEERE INTELLIGENT SOLUTIONS GROUP, Des Moines, IA <i>Computer Vision-based Machine Automation</i></p> <p>Developed two new systems for vision-based automation using computational geometry and motion tracking. Managed both projects: designed the algorithms and systems, coordinated camera and computing hardware, ordered prototype parts, scheduled testing time in the field, verified the algorithm to 12mm using a Total Station. Patent awarded as Primary Inventor.</p>
SUMMER 2014	<p>Electronic Hardware Design Intern JOHN DEERE ELECTRONIC SOLUTIONS, Fargo, ND <i>Electronic Hardware Design</i></p> <p>Supported the Field Connect Wireless verification process through RF, low-current, and battery testing.</p>

TEACHING

MARCH 2021	<p>Co-Instructor CALTECH EE 148 <i>Advanced Topics in Computer Vision: Conservation and Sustainability</i> Co-designed and led a course in computer vision with a focus on building solutions to real-world problems in conservation and sustainability</p>
OCTOBER 2020	<p>Invited Lecture GEORGIA TECH VIP-4601 VVS <i>HumaniTech</i> “Towards global-scale biodiversity monitoring: scaling geospatial and taxonomic coverage using contextual clues”</p>
OCTOBER 2020	<p>Invited Lecture GEORGIA TECH VIP-4601 VWE <i>GaTech4Wildlife</i> “Towards global-scale biodiversity monitoring: scaling geospatial and taxonomic coverage using contextual clues”</p>
OCTOBER 2020	<p>Invited Tutorial COMPSUST DOCTORAL CONSORTIUM “Building models for static sensors: the good, the bad, and the ugly”</p>
APRIL 2020	<p>Invited Tutorial WILDLABS TECH TUTOR TALK SERIES “How do I get started using machine learning for my camera traps?”</p>
APRIL 2020	<p>Invited Lecture CALTECH EE/CNS/CS 148 <i>Selected Topics in Computational Vision</i> “Computer Vision for Conservation”</p>
JANUARY 2015 TO APRIL 2015	<p>MATLAB Teaching Assistant SEATTLE UNIVERSITY ELECTRICAL AND COMPUTER ENGINEERING, Seattle, WA Teaching and Tutoring Introductory Coding</p>
MARCH 2014 TO APRIL 2015	<p>Facilitated Study Group Coordinator SEATTLE UNIVERSITY MATHEMATICS DEPT., Seattle, WA Led a once-weekly study group, worked directly with professors, and ran oral exam reviews.</p>
JANUARY 2014 TO APRIL 2015	<p>Learning Assistant SEATTLE UNIVERSITY MATH LAB, Seattle, WA Drop-in mathematics tutor for subjects through differential equations</p>
SEPTEMBER 2013 TO JUNE 2014	<p>Learning Assistant SEATTLE UNIVERSITY LEARNING COMMONS, Seattle, WA One-on-one tutor specializing in mathematics and calculus-based physics.</p>
OCTOBER 2012 TO JANUARY 2014	<p>STEM Teaching Assistant UNIVERSITY TUTORS FOR SEATTLE SCHOOLS, Seattle, WA Classroom assistant and one-on-one tutor at a low-income public middle school. Focused on inspiring ELL and special needs students to succeed in STEM.</p>

LEADERSHIP, DIVERSITY, INCLUSION, AND EQUITY

OCTOBER 2020 TO Present	Member CALTECH CMS DEI STEERING COMMITTEE, Pasadena, CA
JUNE 2020	Co-Lead and Organizer CALTECH CMS TOWN HALL ON REMOVING RACISM IN ACADEMIA, Pasadena, CA
JANUARY 2019 TO PRESENT	Member CALTECH WOMEN'S ENGAGEMENT BOARD, Pasadena, CA
JANUARY 2017 TO PRESENT	Founder and Chair CALTECH GRADUATE WOMEN IN CMS, Pasadena, CA
JANUARY 2017 TO PRESENT	Member CALTECH EAS DIVISION GRADUATE COUNCIL, Pasadena, CA
JANUARY 2017 TO PRESENT	Member CALTECH CMS DEPARTMENT GRADUATE COUNCIL, Pasadena, CA
JUNE 2015 TO JUNE 2016	Regional Collegiate Communications Editor SWE REGION J, Seattle, WA
JUNE 2015 TO JUNE 2016	Chapter President ALPHA SIGMA NU, Seattle, WA <i>Jesuit Honors Society for Scholarship and Service</i>
JUNE 2015 TO JUNE 2016	Vice President SWE SEATTLE UNIVERSITY SECTION, Seattle, WA
JUNE 2013 TO JUNE 2014	President IEEE SEATTLE UNIVERSITY BRANCH, Seattle, WA
JUNE 2013 TO 2014	SWE Future Leader SWE SEATTLE UNIVERSITY SECTION, Seattle, WA
JUNE 2013 TO JUNE 2014	Outreach Coordinator SWE SEATTLE UNIVERSITY SECTION, Seattle, WA
SEPTEMBER 2012 TO JUNE 2014	Student Advisory Board Member SEATTLE UNIVERSITY, Seattle, WA
SEPTEMBER 2012 TO JUNE 2013	Fundraising Chair SWE SEATTLE UNIVERSITY SECTION, Seattle, WA

PROFESSIONAL DANCE

JULY 2010 TO SEPTEMBER 2012	<p>Company Dancer and Assistant Rehearsal Director ARMITAGE GONE! DANCE, New York, NY <i>Contemporary Choreography and Investigation</i></p> <p>Toured internationally as part of an 11-person company. Performed throughout the USA, as well as in Italy, Germany, and the U.K. Directed rehearsals with 16 Italian dancers in preparation for a performance in Milan, working to communicate through language and cultural barriers.</p>
JUNE 2009 TO SEPTEMBER 2009	<p>Original Workshop Dancer GLOATL, Atlanta, GA <i>Contemporary Improvization</i></p> <p>Explored dance as a performance art in public spaces with this ground-braking Atlanta-based contemporary company.</p>
JUNE 2007 TO JULY 2010	<p>Professional Dancer ATLANTA BALLET, Atlanta, GA <i>Classical Ballet, Contemporary Choreography</i></p> <p>Performed and trained with the Atlanta Ballet, taking featured roles such as the Evil Queen in <i>Snow White</i>, The Widow in <i>Dracula</i>, Princess in <i>Swan Lake</i>, and Navigator in <i>Mozart's Magic Flute</i>. Originated roles in Victor Quihahda's <i>Impending Savour Assessment</i>, John McFall's <i>Cinderella</i> and <i>The Nutcracker</i>, and Lauri Stalling's <i>big</i>. Toured to Monterrey, Mexico to perform <i>Swan Lake</i>.</p>