Curriculum Vitae - Dr. Sara Beery

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Academic Qualifications

2016 - 2023 Doctorate of Philosophy in Computing and Mathematical Sciences
California Institute of Technology, Pasadena, CA
Advisor: Pietro Perona | Computational Vision Lab
Committee: Yisong Yue (chair), Pietro Perona, Serge Belongie, Katie Bouman

2012 - 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

Career History

2023 - Present Homer A. Burnell Career Development Assistant Professor
Massachussetts Institute of Technology, Cambridge, MA
Academic Unit: Electrical Engineering and Computer Science
Faculty: Artificial Intelligence and Decision Making
Research Unit: Computer Science & Artificial Intelligence Laboratory
PI at the Woods Hole Oceanographic Institution

2022 - 2023 Visiting Faculty Researcher
2019 - 2022 Student Researcher
Google Research, Mountain View, CA

2018 Research Intern
Microsoft Research, Redmond, WA

2016 Research Intern
MIT Lincoln Laboratory, Lexington, MA

2015 Machine Automation Engineering Co-Op
2014 Eletronic Hardware Design Intern
John Deere, Des Moines, IA

Honors and Awards

2023-30	Homer A. Burnell Endowed Chair at MIT
2024	Keynote speaker for the US-China Frontiers of Science, Engineering, and Medicine Symposium by US National Academies
2024	Invited speaker for the United Nations World Wildlife Day
2023	Keynote speaker for the 1st US-Africa Frontiers of Science, Engineering, and Medicine Symposium by US National Academies
2022	Caltech Amori Doctoral Prize for Outstanding Thesis in Computing and Mathematical Sciences
2021	Caltech Resnick Sustainability Institute Graduate Scholar
	Caltech Engineering and Applied Science Division DEI New Horizons Award
	Caltech Computing and Mathematical Sciences Gradient for Change DEI Award
	University of Chicago Center for Data and Computing Rising Star in Data Science
2020-21	Amazon 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

Publications and Patents

(*denotes equal contribution, †denotes equal supervision)

Peer-Reviewed Conference and Journal Publications

Lee, Li, **Beery**, Huang, Fei, Yeh, Benes (2024). Tree-D Fusion: Simulation-Ready Tree Dataset from Single Images with Diffusion Priors. Proceedings of the European Conference in Computer Vision.

Balloli, **Beery**, and Bondi-Kelly (2024). Are They the Same Picture? Adapting Concept Bottleneck Models for Human-AI Collaboration in Image Retrieval. Proceedings of the International Joint Conference on Artificial Intelligence.

Rolnick, Aspuru-Guzik, **Beery**, Dilkina, Donti, Ghassemi, Kerner, Monteleoni, Rolf, Tambe and White (2024). Application-Driven Innovation in Machine Learning. Proceedings of the International Conference in Machine Learning.

Mantova, Johnson, Antebi, **Beery**, Blumstein, Cohen, Defavari, Feng, Feuer, Gersony, Hammond (2024). Monitoring urban trees across the world. Report from the Urban Trees Ecophysiology Network inaugural workshop, Georgia Center at the University of Georgia, Athens, United States, March 2023. The New phytologist, 242(5), pp.1881-1885.

Berger-Wolf, **Beery**, Rolnick, Kitzes, Thau, Tuia, Rubenstein (2023). Sustainable, trustworthy, human-technology partnership, in A landmark environmental law looks ahead. Science 382, 1348-1355.

Chen, Hu, Coker, Berumen, Costelloe, **Beery**, Rohrbach, Elhoseiny (2023). MammalNet: A Large-scale Video Benchmark for Mammal Recognition and Behavior Understanding. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition.

Kay, Kulits, Stathatos, Deng, Young, **Beery**, Van Horn, Perona (2022). The Caltech Fish Counting Dataset: A Benchmark for Multiple-Object Tracking and Counting. Proceedings of the European Conference on Computer Vision.

Beery, Wu, Edwards, Pavetic, Majewski, Mukherjee, Chan, Morgan, Rathod, Huang (2022), The Auto Arborist Dataset: A Large-Scale Benchmark for Multimodal Urban Forest Monitoring Under Domain Shift. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition.

Sagawa, Koh, Lee, Gao, Xie, Shen, Kumar, Hu, Yasunaga, Marklund, **Beery**, David, Stavness, Guo, Leskovec, Saenko, Hashimoto, Levine, Finn, Liang (2022). Extending the WILDS Benchmark for Unsupervised Adaptation. Proceedings of the International Conference on Machine Learning. (Oral).

Tuia*, Kellenberger*, **Beery***, Costelloe*, Zuffi, Risse, Mathis, Mathis, Langvelde, Burghardt, Kays, Klink, Wikelski, Couzin, van Horn, Crofoot, Stewart, Berger-Wolf (2022). Perspectives in Machine Learning for Wildlife Conservation. Nature Communications.

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

Van Horn, Cole, **Beery**, Wilber, Belongie, Mac Aodha (2021). Benchmarking Representation Learning for Natural World Image Collections. 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. 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. Methods in Ecology and Evolution.

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

Beery, Liu, Morris, Piavis, Kapoor, Joshi, Meister, Perona. (2020). Synthetic examples improve generalization for rare classes. Proceedings of the IEEE Winter Conference on Applications of Computer Vision.

Beery, Van Horn, Perona. (2018). Recognition in terra incognita. Proceedings of the European Conference on Computer Vision (ECCV).

Miguel, **Beery**, Flores, Klemesrud, Bayrakcismith. (2016). Finding areas of motion in camera trap images. Proceedings of the IEEE International Conference on Image Processing. **(Oral)**

Policy Documents

Global Partnership on Artificial Intelligence (as an Advisor). Biodiversity & Artificial Intelligence, Opportunities and Recommendations. https://gpai.ai/projects/responsible-ai/environment/biodiversity-and-AI-opportunities-recommendations-for-action.pdf.

Patents

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 Articles

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

Whitepapers

Xu, Rolf, **Beery**, Bennett, Berger-Wolf, Birch, Bondi-Kelly, Brashares, Chapman, Corso, Davies, Garg, Gaylard, Heilmayr, Kerner, Klemmer, Kumar, Mackey, Monteleoni, Moorcroft, Palmer, Perrault, Thau, Tambe (2023). Reflections from the Workshop on AI-Assisted Decision Making for Conservation.

Cole, Stathatos, Lütjens, Sharma, Kay, Parham, Kellenberger, **Beery** (2023). Teaching Computer Vision for Ecology.

Preprints/Under Review

Sundaram*, Chae*, Tian, **Beery**†, Isola†. Personalized Representations from Personalized Generation.

Vendrow, Pantazis, Shepard, Brostow, Jones, Mac Aodha†, **Beery**†, Van Horn†. INQUIRE: A Natural World Text-to-Image Retrieval Benchmark.

Hulkund, Chapman, Rattling-Leaf, Oliver, **Beery**. Data Sharing Policies and Considerations Must Influence Machine Learning Research Directions in Ecological Applications.

Park, Zhang, Yu, **Beery**, Huang. Learning Hierarchical Semantic Classification by Grounding on Consistent Image Segmentations.

Kay, Haucke, Stathatos, Deng, Young, Perona, **Beery***, Van Horn*. Align and Distill: Unifying and Improving Domain Adaptive Object Detection.

Kuznedelev, Tabesh, Noorbakhsh, Frantar, **Beery**, Kurtic, Alistarh. TACO: Vision Models Can Be Efficiently Specialized via Few-Shot Task-Aware Compression.

Das, Bruintjes, Lengyel, van Gemert, **Beery**. Domain Adaptation for Rare Classes Augmented with Synthetic Samples.

Peer-Reviewed Workshop Publications

Mukherjee, O'Neill, Tianshuang, Shrey, Tomso, Adebola, **Beery**, Huang, Goldberg. Tree Genus Classification from GPS-Registered Aerial Imagery. FGVC Workshop at CVPR 2024.

Sharma, Wagner, **Beery**, Dickson, Dickinson, Parker. Monitoring Social Insect Activity with Minimal Human Supervision. FGVC Workshop at CVPR 2024.

Kay, Stathatos, Deng, Young, Perona, **Beery**, Van Horn. Unsupervised Domain Adaptation in the Real World: A Case Study in Sonar Video. CompSust Workshop at NeurIPS 2023 (Oral).

Sagawa, Koh, Lee, Gao, Xie, Shen, Kumar, Hu, Yasunaga, Marklund, **Beery**, David, Stavness, Guo, Leskovec, Saenko, Hashimoto, Levine, Finn, Liang. Extending the WILDS Benchmark for Unsupervised Adaptation. DistShift Workshop at NeurIPS 2021.

Beery, Agarwal, Cole, Birodkar. The iWildCam 2021 Competition Dataset. The Eighth Fine-Grained Visual Categorization Workshop at CVPR 2021.

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

Lanzino **& Beery**. Image-to-Image Translation for Synthetic Samples of Rare Classes. CV4Animals Workshop at CVPR 2021.

Kulits, Pan, Van Horn, **Beery**, Young, Perona. Automated Salmonid Counting in Sonar Data. Climate Change AI Workshop at NeurIPS 2020.

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

Beery, Cole, Gjoka. The iWildCam 2020 Competition Dataset. The Seventh Fine-Grained Visual Categorization Workshop at CVPR 2020.

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

Beery, Morris, Yang. Efficient Pipeline for Camera Trap Image Review. Data Mining and AI for Conservation Workshop at Knowledge Discovery and Data (KDD) 2019. **(Selected to be featured in the KDD Earth Day Session.)**

Beery, Morris, Perona. The iWildCam 2019 Challenge Dataset. The Sixth Fine-Grained Visual Categorization Workshop at CVPR 2019.

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

Beery, Van Horn, Mac Aodha, Perona. The iWildCam 2018 Challenge Dataset. The Fifth Fine-Grained Visual Categorization Workshop at CVPR 2018.

Conference Abstracts

Kay, Haucke, Stathatos, Deng, Young, Perona, **Beery**, Van Horn. A Unified Framework for Domain Adaptative Object Detection. New England Computer Vision Workshop 2023 (Best Poster Honorable Mention).

Iannarilli, Oliver, Birch, **Beery**, Fegraus, Flores, Kays, Ahumada, Jetz. Wildlife Insights: How Camera Trap Data Can Foster Global Biodiversity Conservation. AGU Fall Meeting 2021.

Beery, Wu, Rathod, Votel, Huang. Improving Computer Vision for Camera Traps: Leveraging Practitioner Insight to Build Solutions for Real-World Challenges. Ecological Society of America Meeting 2020.

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

Beery, Morris, Yang, Simon, Norouzzadeh, Joshi. Efficient pipeline for automating species id in new camera trap projects. Biodiversity Information Science and Standards 2019.

Robertson, Belongie, Hartwig, Kaeser-Chen, Zhang, Tan, Liu, Brulé, Deltheil, Loarie, Van Horn, Mac Aodha, **Beery**, Perona, Copas, Waller. Training machines to identify species using gbif-mediated datasets. Biodiversity Information Science and Standards 2019.

Edwards, **Beery**, Railey. An investigation into bio-inspired sonar search performance. The Journal of the Acoustical Society of America, 2017.

Selected Invited Talks & Panels

AI-Enabled Scientific Discovery in Natural World Imagery

- MIT Solve Keynote Speaker, 2024
- Max Planck Institute of Collective Behavior Distinguished Seminar Speaker, 2024
- AI and Biodiversity Change Session Invited Speaker, the Ecological Society of America Meeting, 2024
- NASA JPL Scientific Understanding with Data Science Seminar Speaker, 2024
- AI2 Environmental Data Science Seminar Speaker, 2024
- CV4Science Workshop Keynote Speaker at CVPR, 2024

AI and Conservation

- U.N. World Wildlife Day Invited Speaker, 2024
- U.S. Department of the Interior AI Strategy Meeting Keynote Speaker, 2024
- U.S. Department of Fish and Wildlife Geospatial Training Workshop Keynote Speaker, 2024
- Keynote at the International Symposium on Heirarchical Bio-Navigation, 2024

Generalization vs Specialization in Computer Vision for Ecology

- Cambridge University AI for Environmental Risks Seminar Speaker, 2024
- Harvard Center for Research on Computation and Society Seminar Speaker, 2024
- Oregon State University Ecology, Evolution, and Conservation Biology Seminar Speaker, 2024

Opportunities for AI in Movement Ecology

- Room2Roam Keynote Speaker at The Ohio State University, 2024

Monitoring the Urban Forest with Auto Arborist

- RISE Seminar, 2023
- Keynote at the ImageXD Symposium, 2023

- AI Helps Ukraine Seminar, 2022
- Record.ai Seminar, 2022
- MIT EAPS Seminar, 2022
- Stanford Computer Vision Seminar, 2022
- Cornell Urban AI Seminar, 2022

AI and Conservation: Processing ImageData
- WWF Fuller Seminar, 2023

AI & Wildlife Images
- UCL AI4Environment Seminar, 2023

Efficient AI for Wildlife Conservation
- TinyML Seminar, 2023
- Edge AI Frontiers: Models, Systems and Applications Workshop at AJCAI 2022

Pre-training for Environmental Monitoring
- Pre-training Workshop at ICML 2022

Computational Imaging Challenges in Ecological Monitoring
- Keynote at the International Conference in Computational Photography 2022

Open Challenges in Generalizeable Computer Vision for Ecology
- Session on the Promise of Automated Methods at IntECOL 2022
- Camera Trap Ecology Meets AI Workshop 2022

Participartory Human-AI Elephant Population Modeling
- Seminar at The Wildlife Society Annual Meeting, 2022
- Keynote at the Computer Vision for Animals Workshop at CVPR 2022

Towards Animal-Centric AI (Panelist) – Queer in AI Workshop at NeurIPS 2021

Computer Vision for Global-Scale Biodiversity Monitoring - Scaling Geospatial and Taxonomic Coverage Using Contextual Clues
- AI2ASE Seminar at AAAI, 2023
- AI4Bio Seminar, 2023
- Keynote at US-Africa Frontiers in Science, Engineering in Medicine Session on Biodiversity, 2022
- Harvard University Center for the Environment Seminar, 2022
- DeepLabCut AI Residency Invited Talk, 2022
- EPFL School of Computer & Communication Sciences Seminar, 2022
- ETH Zurich Sustainability Seminar, 2022
- MIT EECS Seminar, 2022
- Caltech Environmental Science and Engineering Seminar, 2022
- UC Berkeley EECS Seminar, 2022
- University of Washington Computer Science & Engineering Seminar, 2022
- Cornell University Computer Science Seminar, 2022
- UCSB PSTATS Seminar, 2022
- UCSB Computer Science & Computer Engineering Joint Seminar, 2022
- The Ohio State University Computer Science & Engineering Seminar, 2022
- University of Melbourne Computer Science Seminar, 2022
- Stevens Institute of Technology Data Science Seminar, 2022
- UCLA Electrical and Computer Engineering Seminar, 2022
- MIT Operations Research Center Seminar on Sustainability and Climate Change, 2022
- University of Sydney Computer Science Seminar, 2022
- Climate Change AI Webinar Series, 2022 (With Dave Thau)
- Max Planck Institute for Intelligent Systems and Cyber Valley Scientific Symposium, 2022

- Georgia Tech Computational Science and Engineering Seminar, 2021
- University of New South Wales Cognitive Robotics Seminar, 2021
- Reed College Computer Science Seminar, 2021
- Berkeley AI + Climate Seminar, 2021
- University of Guelph CARE-AI and Biodiversity Institute Joint Seminar, 2021
- Seminar at Microsoft Research Cambridge, 2020
- Computational Sustainability (CompSust) Doctoral Consortium, 2020

Beyond Benchmarks - Going from Competition-Winning Methods to Real-World Solutions

- Keynote at LifeCLEF, 2021
- Queer in AI at ICML, 2021

AI-Assisted Biodiversity Monitoring

- Data Science Frontiers Seminar at the African Institute for Mathematical Sciences, 2021
- Leveraging AI to Extend Specimen Networks at iDigBio, 2021
- Princeton AI4All, 2021
- Caltech i-STEM Initiative Panelist, 2021

Out in Technology and Math (Panelist) – UCSD, 2021

Computer Vision for Biodiversity Monitoring and Conservation

- EPFL Joint Mathis Lab Seminar, 2021
- AI for Mankind, 2021
- Yale Center for Biodiversity and Global Change Seminar, 2020

Deep Learning & Camera Traps

- Plenary at Imaginecology Workshop at Le GDR EcoStat, 2020

Improving Computer Vision for Camera Traps: Leveraging Practitioner Insight to Build Solutions for Real-World Challenges

- Ecological Society of America Annual Meeting, 2020
- CompSust Open Graduate Seminar, 2020
- Camera Trap Technology Symposium, 2019

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

AI for Camera Traps - Challenges, Best Practices, Benchmarks, and De-Siloing Data

- World Agroforestry Centre (ICRAF) Seminar, 2020
- WILDLABS Virtual Meetup on Camera Trapping, 2019
- Computer Vision for Wildlife Conservation Workshop at ICCV, 2019

What's Next in Computer Vision for Wildlife Monitoring (Panelist) – Computer Vision for Wildlife Conservation Workshop at ICCV, 2019

Computer Vision for Camera Traps

- Caltech AI4Science Workshop, 2019
- USC Center for AI in Society Symposium on AI for Conservation, 2019
- Research Seminar at Google Venice, 2019

An investigation into bio-inspired sonar search performance – NASA-JPL Robotics Seminar, 2017

Identifying snow leopards in camera trap images –Seattle U. S.M.A.R.T. Seminar, 2016

Funding Awarded

Beery, S., Generating Data to Improve Endangered Species Monitoring, MIT Research Support Committee Grant from the Reed Fund, $90,000

Beery, S., Multimodal Biodiversity Monitoring, MIT-IBM Grant, awarded May 2024 $242,988

Beery, S., Terrer, C. Detecting rapid biodiversity changes with species distribution models, Google-MIT Computing for the Health of the Planet Grant, awarded June 2024, $50,000

Beery, S., Isola, P., Generating High-Quality, Task-Specific Data for the Real World, Google-MIT Grant, awarded June 2024, $130,000

Ferraz, A., **Beery, S.**, Monitoring the distribution and phenology of key tree species across tropical rainforests, NASA JPL Grant, awarded August 2023, $360,000

Berger-Wolf, T., **Beery, S.**, Rolnick, D., Kitzes, J., Gaynor, K., Taylor, G., Jarzyna, M., Pollock, L. *ABC: AI and Biodiversity Change*, NSF Global Climate Center Grant, awarded September 2023, $10,000,000

Beery, S., *Automated counting of migrating salmon for conservation and fisheries management in the Pacific Northwest*, MIT J-WAFS Grant, awarded April 2023, $150,000

Beery, S., Huang, J., Goldman, K., Yu, S. *Learning Fine-grained, Long-tailed Tree Species Segmentation and Phenotyping from Ground and Aerial Imagery*, Google/Berkeley Research Collaboration Grant, awarded August 2022, $100,000

Beery, S., and Perona, P., *Summer School on Computer Vision Methods for Ecology*, Resnick Sustainability Institute Large-Scale Proposal, Computational costs supported by Microsoft AI for Earth and Amazon AWS, awarded August 2021, $222,285 + $180,000 in-kind

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., PIMCO Data Science Fellowship, awarded December 2020, $15,000

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

Beery, S., Amazon AI4Science Fellowship, awarded September 2020, $20,000

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, additional $10,000 in-kind awarded September 2021.

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

Beery, S., National Science Foundation Graduate Research Fellowship, awarded April 2016, $138,000

Supervision

PhD Students at MIT
Rupa Kurinchi-Vendhan (Sep 2024 -)
Justin Kay (Sep 2023 -)
Julia Chae (Sep 2023 -)
Timm Haucke (Sep 2023 -)
Edward Vendrow (Sep 2023 -)
Neha Hulkund (Sep 2023 -)

PhD examiner (external)
Deblina Bhattacharjee - EPFL (2023)

PhD candidacy examiner (external)
Nina van Thiel - EPFL (2023)

Undergrad and Masters Supervision
Supervised Undergraduate Projects at MIT: 5
Supervised Masters Projects at MIT: 2
Supervised Masters projects at TU Delft: 4
Supervised Undergraduate Projects at Caltech: 4

Selected Media

AI for Conservation and Community Building: an interview with Sara Beery, Assistant Professor of Electrical Engineering and Computer Science, The Technologist, May 2024

United Nations Marks World Wildlife Day with a Call to Bridge Conservation Technology Gaps, CITES Blog, April 2024

Mapping Urban Trees Across North America with the Auto Arborist Dataset, Google AI Blog, June 2022

Boosting human and machine expertise with conservation tech: Q&A with Sara Beery, Mongabay, December 2021

5 AI/ML Research Papers on Object Detection You Must Read, Medium, April 2021

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

Academic Service

Advisory Boards and Leadership
Biodiversity Comminuty Lead, Climate Change AI
Faculty Advisory Board Member, Ocean Vision AI
Faculty Advisory Board Member, NSF Ecological Data Science Innovation and Inclusion Lab
Advisory Board Member, WildMon
Faculty Advisor, UC Berkeley Eric and Wendy Schmidt Center for Data Science and Environment
Steering Committee Member, Resnick Sustainability Institute Quantitative Ecology Initiative
Global Visioneer, XPrize Biodiversity and Conservation

Area Chair: NeurIPS 2024, CVPR 2024, ECCV 2024, WACV 2024

Workshop and Symposium Organizer

Rising Stars in EECS, to be hosted at MIT Fall 2024

Workshop on Computer Vision for Ecology, to be hosted at ECCV 2024

Aspen Global Change Institute Workshop on AI and Biodiversity: Overcoming Barriers to Impact, 2024

AI and Biodiversity Change, ESA 2024 Seminar Session

A Roadmap towards Comprehensive Biodiversity Monitoring at Scale, ESA 2023 Inspire Session

The Future of Ecological Monitoring is Collaboration with Artificial Intelligence, ESA 2023 Oral Session

The Fine-Grained Visual Categorization Workshop, CVPR 2018, CVPR 2019, CVPR 2020, CVPR 2021, CVPR 2022, CVPR 2023, CVPR 2024

The Computer Vision for Animals Workshop, CVPR 2022, CVPR 2023, CVPR 2024

Workshop on Scholars and Big Models, CVPR 2023

Community of Practice on Remote Sensing and Machine Learning for Wildlife Surveys at the U.S. Fish and Wildlife Service Branch of Migratory Bird Surveys, 2020 - Present

AI for Animal Re-ID Workshop, WACV 2020

Visipedia Research Consortium Yearly Meeting, 2018, 2019, 2020, 2023

Program Committees

DistShift Workshop, NeurIPS 2021
Fine Grained Visual Categorization Workshop, CVPR 2018, 2019, 2020, 2021, 2022, 2023
CV4Animals Workshop, CVPR 2021, 2022, 2023
EarthVision: Large Scale Computer Vision for Remote Sensing Imagery, CVPR 2021, 2022, 2023
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

Editing and Grant Reviews

Grant Review Panelist for the NSF
Guest Editor for Methods in Ecology and Evolution Special Topics on Conservation, Ecology, and Artificial Intelligence
Guest Editor for the International Journal in Computer Vision (IJCV) Special Topics on Computer Vision for Animals
Editorial Board Guest Member for AI for Sustainability Special Issue of IEEE Latin America Transactions
Guest Subject Matter Editor for Ecological Applications
Meta-Reviewer for the Climate Change AI Innovation Grants Program 2022, 2023
Reviewer for the Google AI for Social Good Workshop & Grants Program 2022
Reviewer for the Earth Ranger Conservation Tech Awards 2022

Reviewing

CVPR **(Outstanding Reviewer 2023)**, NeurIPS **(Outstanding Reviewer 2021)**, ECCV, ICCV, ICLR, ICML, WACV, Special Track on AI for Social Impact at 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, European Journal of Wildlife Research

Diversity, Equity, and Inclusion

CVPR 2024 DEI Co-chair
Queer in AI Community Event Organizer, 2021-Present
Caltech CMS DEI Steering Committee Member, 2020-2022 Founder and Chair, Caltech Graduate Women in CMS, 2016-2020
Caltech Women Mentoring Women Mentor, 2017-2020

Teaching

Courses

Advances in Computer Vision - MIT 6.8300/1: Spring 2024 (580 Students)
Deep Learning - MIT 6.S898: Fall 2023 (180 Students)
Workshop on Computer Vision Methods for Ecology - Caltech Resnick Sustainability Institute Summer 2022, 2023, 2025 (20 students per year)
Deep Learning and Reinforcement Learning Summer School, 2024 (200 students)
African Computer Vision Summer School, 2024 (40 students)
Machine Learning Summer School Africa, 2023 (40 students)
Advanced Topics in Computer Vision: Conservation and Sustainability - Caltech EE/CNS/CS 148: Spring 2021 (40 students)

Guest Lectures & Tutorials

Monitoring the Urban Forest

- MIT 6.8300/6.8301: Advances in Computer Vision, 2023

Participatory Human-AI Elephant Population Monitoring - A Case Study in the Greater Mara Ecosystem

- Stanford CS231N: Deep Learning for Computer Vision, 2023

Computer Vision for Global Scale Biodiversity Monitoring

- McGill University COMP-767: Machine Learning Applied to Climate Change, 2023
- Carnegie Mellon University Course 17737: AI Methods for Social Good, 2023
- University of North Carolina Chapel Hill COMP 776/590: Computer Vision, 2023
- MIT 6.034: Intro to AI, 2022
- Caltech

Towards global-scale biodiversity monitoring: scaling geospatial and taxonomic coverage

- HumaniTech, Georgia Tech VIP-4601 VVS, 2020
- GaTech4Wildlife, Georgia Tech VIP-4601 VWE, 2020

Building models for static sensors: the good, the bad, and the ugly

- CompSust Doctoral Consortium, 2020

How do I get started using machine learning for my camera traps?

- WILDLABS Tech Tutor Talk Series, 2020

Computer Vision for Conservation

- Advanced Topics in Computational Vision, Caltech EE/CNS/CS 148, 2020