Dr. Grant Van Horn

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Google Scholar
ORCID

Research Interests

Image, audio, and video understanding; human-in-the-loop machine learning systems; applications of machine learning to biodiversity and conservation problems.

Employment

University of Massachusetts, Amherst, MA
Assistant Professor, 09/2023 - Present

Cornell University, Ithaca, NY
Research Engineer, 06/2019 - 09/2023

Google
Visiting Faculty Researcher, 2020 - 2021

Amazon Web Services, Pasadena, CA
Senior Applied Scientist, 01/2019 - 06/2019

Cornell University, New York, NY
Visiting Researcher, 01/2013 - 06/2013

Education

Caltech, Pasadena, CA
PhD, Computer Science, 2019
Thesis: "Towards a Visipedia: Combining Computer Vision and Communities of Experts."
Committee: Pietro Perona, Serge Belongie, Adam Wierman, Yisong Yue

Caltech, Pasadena, CA
MS, Computer Science, 2019

University of California, San Diego, CA
MS, Computer Science, 2014

University of California, San Diego, CA
BS, Computer Science, 2012

Internships

Google, Los Angeles, CA, Summer 2017

Worked with the Mobile Vision team.

Google, Los Angeles, CA, Summer 2015
Worked with the Mobile Vision team.

Apple, Inc., Cupertino, CA, Summer 2011
Worked with the Image, Media, and Graphics group on FaceTime.

Qualcomm, San Diego, CA, Summer 2010
Worked with the Computer Aided Engineering group on circuit board rendering.

Awards and Honors

2021 Fast Company Most Productive People, [article]

2020 Ben P.C. Chou Doctoral Prize in Information Science and Technology, Caltech

2012 Computing Research Association Outstanding Undergraduate Researcher, Honorable Mention

2010 California Institute for Telecommunications and Information Technology (Calit2) Undergraduate Scholar

Service to the Academic Community

- **Reviewer for international conferences.** Computer Vision and Pattern Recognition (CVPR)
- **Reviewer for journals**. The American Naturalist

Public Datasets
I created or co-created the following public datasets:

Sapsucker Woods 60 (SSW60), 2022
Caltech Fish Counting, 2022
iNaturalist Localization 500 (iNatLoc500), 2022
Natural World Tasks (NeWT), 2021
iNaturalist Dataset, 2021
iNaturalist Dataset, 2019
Caltech Camera Traps, 2018
iNaturalist Dataset, 2018
iNaturalist Dataset, 2017
North American Birds (NABirds), 2015

Workshop Organization
I co-organized the following international workshops:

Fine-grained Visual Categorization 10, CVPR, Vancouver, BC, 2023
Fine-grained Visual Categorization 9, CVPR, New Orleans, LA, 2022
Fine-grained Visual Categorization 8, CVPR, Nashville, TN, 2021
Fine-grained Visual Categorization 7, CVPR, Seattle, WA, 2020
Fine-grained Visual Categorization 6, CVPR, Long Beach, CA, 2019
Fine-grained Visual Categorization 5, CVPR, Salt Lake City, UT, 2018

Fine-grained Visual Categorization 4, CVPR, Honolulu, HI, 2017
Fine-grained Visual Categorization 3, CVPR, Boston, MA, 2015
Fine-grained Visual Categorization 2, CVPR, Portland, OR, 2013

Selected Talks and Presentations

Merlin Sound ID: Building Shazam for Birds. Colorado State University - Department of Fish, Wildlife, and Conservation Biology Graduate-Faculty Seminar Series (November, 2022) [recording]

What's That Bird? (May, 2022) [recording]

Merlin Sound ID. Scripps Institution of Oceanography Machine Learner's Group (February, 2022)

Who's Singing? How to Use Merlin Bird ID to Identify Bird Calls. (July, 2021) [recording]

Visipedia + iNaturalist. Center for Data Science, UMass Amherst (October, 2019) [recording]

Visipedia. LifeCLEF 2019 Workshop, CLEF 2019 (September, 2019)

Demos

Van Horn, G., Branson, S., Wah, C., Perona, P., Belongie, S., "Visipedia Backend: Collaborative Tools for Image Dataset Creation and Management," IEEE Computer Vision and Pattern Recognition (CVPR) Demonstration Session, Columbus, OH, June, 2014

Van Horn G., Branson S., Wah C., Belongie S.,"iOS Visipedia App for Bird Species Classification," IEEE Computer Vision and Pattern Recognition (CVPR) Demonstration Session, Colorado Springs, CO, June, 2011

Van Horn G., Belongie S., "Visipedia," Calit2 Undergraduate Scholar Report Presentations, La Jolla, CA, Sept., 2010

Selected Publications

Cole, E., Van Horn, G., Lange, C., Shepard, A., Leary, P., Perona, P., Loarie, S., Mac Aodha, O., "Spatial Implicit Neural Representations for Global-Scale Species Mapping," ICML, Honolulu, HI, Jul 2023

Van Horn, G., Qian, R., Wilber, K., Adam, H., Mac Aodha, O., Belongie, S., "Exploring Fine-Grained Audiovisual Categorization with the SSW60 Dataset," Proceedings of the European Conference on Computer Vision (ECCV), Tel Aviv, Israel, Oct 2022

Kay, J., Kulits, P., Stathatos, S., Deng, S., Young, E., Beery, S., Van Horn, G., Perona, P., "The Caltech Fish Counting Dataset: A Benchmark for Multiple-Object Tracking and Counting," Proceedings of the European Conference on Computer Vision (ECCV), Tel Aviv, Israel, Oct 2022

Cole, E., Wilber, K., Van Horn, G., Yang, X., Fornoni, M., Perona, P., Belongie, S., Howard, A., Mac Aodha, O., "On Label Granularity and Object Localization," Proceedings of the European Conference on Computer Vision (ECCV), Tel Aviv, Israel, Oct 2022

Tuia, D., Kellenberger, B., Beery, S., Costelloe, B., Zuffi, S., Risse, B., Mathis, A., Mathis, M., van Langevelde, F., Burghardt, T., Kays, R., Klinck, H., Wikelski, M., Couzin, I., Van Horn, G., Crofoot, M., Stewart, C., Berger-Wolf, Tanya., "Perspectives in machine learning for wildlife conservation," Nature communications, 2022

Van Horn, G., Cole, E., Beery, S., Wilber, K., Belongie, S., Mac Aodha, O., "Benchmarking Representation Learning for Natural World Image Collections," IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), Nashville, TN, June 2021

Van Horn, M., Barry, D., Ranade, S., Van Horn, G., "Few-Shot Fine-Grained Visual Classification using Coarse-Grained Supervision," 8th Workshop on Fine-Grained Visual Categorization (FGVC8), IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), Nashville, TN, June 2021

Kulitz, P., Pan, A., Beery, S., Young, E., Perona, P., Van Horn, G., "Automated Salmonid Counting in Sonar Data," Tackling Climate Change with Machine Learning (Workshop), NeurIPS 2020

Van Horn, G., "Towards a Visipedia: Combining Computer Vision and Communities of Experts." Dissertation (Ph.D.), California Institute of Technology. doi:10.7907/20DQ-Y220, 2019

Beery, S., Van Horn, G., Perona, P., "Recognition in Terra Incognita," Proceedings of the European Conference on Computer Vision (ECCV), Munich, Germany, Sept 2018

Van Horn, G., Branson, S., Loarie, S., Belongie, S., Perona, P., "Lean Multiclass Crowdsourcing," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Salt Lake City, UT, June 2018

Van Horn, G., Mac Aodha, O., Song, Y., Cui, Y., Sun, C., Shepard, A., Adam, H., Perona, P., Belongie, S., "The iNaturalist Species Classification and Detection Dataset," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Salt Lake City, UT, June 2018

Branson, S., Van Horn, G., Perona, P., "Lean Crowdsourcing: Combining Humans and Machines in an Online System," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu, HI, July 2017

Patterson, G., Van Horn, G., Belongie, S., Perona, P., Hays, J., "Tropel: Crowdsourcing Detectors with Minimal Training," Conference on Human Computation & Crowdsourcing (HCOMP), San Diego, CA, November 2015

Van Horn, G., Branson, S., Farrell, R., Haber, S., Barry, J., Ipeirotis, P., Perona, P., Belongie, S., "Building a Bird Recognition App and Large Scale Dataset With Citizen Scientists: The Fine Print in Fine-Grained Dataset Collection," IEEE Computer Vision and Pattern Recognition (CVPR), Boston, MA, June, 2015

Branson, S., Van Horn, G., Belongie, S., Perona, P. "Bird Species Categorization Using Pose Normalized Deep Convolutional Nets." BMVC 2014

Wah C., Van Horn G., Branson S., Maji S., Perona P., Belongie S., "Similarity Comparisons for Interactive Fine-Grained Categorization," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Columbus, OH, June, 2014

Branson, S., Van Horn, G., Wah C., Perona P., Belongie S., "The ignorant leading the blind: a hybrid human-machine vision system for fine-grained categorization,"Active and Interactive Methods in Computer Vision Special Issue, International Journal of Computer Vision (IJCV), May 2014

Patterson, G., Van Horn, G., Belongie, S., Perona, P., Hays, J., "Bootstrapping Fine-Grained Classifiers: Active Learning with a Crowd in the Loop," NIPS Workshop on Crowdsourcing: Theory, Algorithms, and Applications, Tahoe, CA, Dec, 2013

Patents

Perona, P., Van Horn G., Branson, S., "Systems and Methods for Online Annotation of Source Data Using Skill Estimation," U.S. Patent No. 11,449,788. 20 Sep. 2022.