

EMPLOYMENT

Assistant Professor Cornell University	Jul 2017 - Present
Postdoctoral researcher Facebook	Oct 2015 – Jul 2017
Postdoctoral researcher Microsoft Research	Aug 2015 – Oct 2015

EDUCATION

PhD University of California, Berkeley Advisor: Jitendra Malik	2015
BTech Indian Institute of Technology, Delhi	2010

PUBLICATIONS

Peer-reviewed conference publications

- [1] **Unsupervised Semantic Segmentation by Distilling Feature Correspondences.**
Mark Hamilton, Zhoutong Zhang, Bharath Hariharan, Noah Snavely, William T. Freeman.
International Conference on Learning Representations (ICLR), 2022 (To appear).
- [2] **Geometry Processing with Neural Fields.**
Guandao Yang, Serge Belongie, Bharath Hariharan, Vladlen Koltun.
Advances in Neural Information Processing Systems (NeurIPS), 2021.
- [3] **Field-guide-inspired Zero-shot Learning.**
Utkarsh Mall, Kavita Bala, Bharath Hariharan.
International Conference on Computer Vision (ICCV), 2021.
- [4] **Coarsely-labeled Data for Better Few-shot Transfer.**
Cheng Perng Phoo, Bharath Hariharan.
International Conference on Computer Vision (ICCV), 2021
- [5] **PiCIE: Unsupervised Semantic Segmentation using Invariance and Equivariance in Clustering.**
Jang-Hyun Cho, Utkarsh Mall, Kavita Bala, Bharath Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2021.
- [6] **Can We Characterize Tasks Without Labels or Features?**
Bram Wallace, Ziyang Wu, Bharath Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2021.

- [7] **Stay Positive: Non-Negative Image Synthesis for Augmented Reality**
Katie Luo, Guandao Yang, Wenqi Xian, Harald Haraldsson, Bharath Hariharan, Serge Belongie.
Computer Vision and Pattern Recognition (CVPR), 2021 (**Oral**).
- [8] **Fine-Grained Few-Shot Classification with Feature Map Reconstruction Networks.**
Davis Wertheimer, Luming Tang, Bharath Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2021.
- [9] **Extreme Rotation Estimation using Dense Correlation Volumes.**
Ruojin Cai, Hadar Averbuch-Elor, Bharath Hariharan, Noah Snavely.
Computer Vision and Pattern Recognition (CVPR), 2021 (**Spotlight**).
- [10] **Self-training For Few-shot Transfer Across Extreme Task Differences.**
C.P.Phoo, B. Hariharan. .
International Conference on Learning Representations (ICLR), 2021 (**Oral**).
- [11] **Wasserstein Distances for Stereo Depth Estimation.**
Divyansh Garg, Yan Wang, Bharath Hariharan, Mark Campbell, Kilian Q Weinberger, Wei-Lun Chao.
NeurIPS, 2020 (**Oral**).
- [12] **Learning Feature Descriptors using Camera Pose Supervision.**
Qianqian Wang, Xiaowei Zhou, Bharath Hariharan, Noah Snavely.
European Conference on Computer Vision (ECCV), 2020 (**Oral**).
- [13] **Fashionpedia: Ontology, Segmentation, and an Attribute Localization Dataset.**
Menglin Jia, Mengyun Shi, Mikhail Sirotenko, Yin Cui, Bharath Hariharan, Claire Cardie, Hartwig Adam, Serge Belongie.
European Conference on Computer Vision (ECCV), 2020 (**Oral**).
- [14] **Learning Gradient Fields for Shape Generation.**
Ruojin Cai, Guandao Yang, Hadar Averbuch-Elor, Zekun Hao, Serge Belongie, Noah Snavely, Bharath Hariharan.
European Conference on Computer Vision (ECCV), 2020 (**Spotlight**).
- [15] **Extending and Analyzing Self-Supervised Learning Across Domains.**
Bram Wallace, Bharath Hariharan.
European Conference on Computer Vision (ECCV), 2020.
- [16] **When Does Self-supervision Improve Few-shot Learning?**
Jong-Chyi Su, Bharath Hariharan, Subhansu Maji.
European Conference on Computer Vision (ECCV), 2020.
- [17] **End-to-end Pseudo-LiDAR for Image-Based 3D Object Detection.**
R. Qian, D. Garg, Y. Wang, Y. You, S. Belongie, B. Hariharan, M. Campbell, K. Q. Weinberger, and W-L Chao.
Computer Vision and Pattern Recognition (CVPR), 2020.
- [18] **Revisiting Pose-Normalization for Fine-Grained Few-Shot Recognition.**
L. Tang, D. Wertheimer, B. Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2020.

- [19] **Train in Germany, Test in The USA: Making 3D Object Detectors Generalize.**
Y. Wang, X. Chen, Y. You, L. Erran Li, B. Hariharan, M. Campbell, K. Q. Weinberger, and W-L Chao.
Computer Vision and Pattern Recognition (CVPR), 2020.
- [20] **Pseudo-lidar++: Accurate depth for 3d object detection in autonomous driving.**
Y. You, Y. Wang, W-L. Chao, D. Garg, G. Pleiss, B. Hariharan, M. Campbell, and K. Q. Weinberger.
International Conference on Learning Representations (ICLR), 2020.
- [21] **GeoStyle: Discovering Fashion Trends and Events.**
U. Mall, K. Matzen, B. Hariharan, N. Snavely, K. Bala.
International Conference on Computer Vision (ICCV), 2019.
- [22] **Few-shot generalization for single-image 3D reconstruction via priors.**
B. Wallace, B. Hariharan.
International Conference on Computer Vision (ICCV), 2019.
- [23] **PointFlow: 3D Point Cloud Generation with Continuous Normalizing Flows.**
G. Yang*, X. Huang*, Z. Hao, M-Y Liu, S. Belongie, B. Hariharan.
International Conference on Computer Vision (ICCV), 2019 (**Oral**).
- [24] **On the efficacy of knowledge distillation.**
J. H. Cho, B. Hariharan.
International Conference on Computer Vision (ICCV), 2019.
- [25] **Few-shot Learning with Localization in Realistic Settings.**
D. Wertheimer, B. Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2019 (**Oral**).
- [26] **Pseudo-LiDAR from Visual Depth Estimation: Bridging the Gap in 3D Object Detection for Autonomous Driving.**
Y. Wang, W-L. Chao, D. Garg, B. Hariharan, M. Campbell, K. Q. Weinberger.
Computer Vision and Pattern Recognition (CVPR), 2019.
- [27] **A Unified Framework for Single-View 3D Reconstruction with Limited Pose Supervision.**
G. Yang, Y. Cui, S. Belongie, B. Hariharan.
European Conference on Computer Vision (ECCV), 2018.
- [28] **Low-shot learning with large-scale diffusion.**
M. Douze, A. Szlam, B. Hariharan, H. Jegou.
Computer Vision and Pattern Recognition (CVPR), 2018.
- [29] **Low-shot Learning from Imaginary Data.**
Y-X. Wang, R. Girshick, M. Herbert, B. Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2018 (**Spotlight**).
- [30] **Resource Aware Person Re-identification across Multiple Resolutions.**
Y. Wang, L. Wang, Y. You, X. Zou, V. Chen, S. Li, G. Huang, B. Hariharan, K. Weinberger.
Computer Vision and Pattern Recognition (CVPR), 2018.

- [31] **Design Mining for Minecraft Architecture.**
E. Yoon, E. Andersen, B. Hariharan, R. Knepper.
Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2018.
- [32] **Low-shot Visual Recognition by Shrinking and Hallucinating Features.**
B. Hariharan, R. Girshick.
International Conference on Computer Vision (ICCV), 2017 (**Spotlight**).
- [33] **Inferring and Executing Programs for Visual Reasoning.**
J. Johnson, B. Hariharan, L. van der Maaten, J. Hoffman, L. Fei-Fei, C. Lawrence Zitnick, R. Girshick.
International Conference on Computer Vision (ICCV), 2017 (**Oral**).
- [34] **Feature Pyramid Networks for Object Detection.**
T-Y Lin, P. Dollár, R. Girshick, K. He, B. Hariharan, S. Belongie.
Computer Vision and Pattern Recognition (CVPR), 2017.
- [35] **CLEVR: A Diagnostic Dataset for Compositional Language and Elementary Visual Reasoning.**
J. Johnson, B. Hariharan, L. van der Maaten, L. Fei-Fei, C. Lawrence Zitnick, R. Girshick.
Computer Vision and Pattern Recognition (CVPR), 2017.
- [36] **Learning Features by Watching Objects Move.**
D. Pathak, R. Girshick, P. Dollár, T. Darrell, B. Hariharan.
Computer Vision and Pattern Recognition (CVPR), 2017.
- [37] **Selecting the Best VM across Multiple Public Clouds: A Data-Driven Performance Modeling Approach.**
N. J. Yadwadkar, B. Hariharan, J. E. Gonzalez, B. Smith, R. Katz.
Symposium of Cloud Computing (SoCC), 2017.
- [38] **Iterative Instance Segmentation.**
K. Li, B. Hariharan, J. Malik.
Computer Vision and Pattern Recognition (CVPR), 2016.
- [39] **Hypercolumns for Object Segmentation and Fine-grained Localization.**
B. Hariharan, P. Arbeláez, R. Girshick, J. Malik.
Computer Vision and Pattern Recognition (CVPR), 2015 (**Oral**).
- [40] **DeepBox: Learning Objectness with Convolutional Networks.**
W. Kuo, B. Hariharan, J. Malik.
International Conference on Computer Vision (ICCV), 2015.
- [41] **Faster Jobs in Distributed Data Processing using Multi-Task Learning.**
N. J. Yadwadkar, B. Hariharan, J. Gonzalez, R. Katz.
In SIAM Data Mining (SDM), 2015.
- [42] **Simultaneous Detection and Segmentation.**
B. Hariharan, P. Arbeláez, R. Girshick, J. Malik.
European Conference on Computer Vision (ECCV), 2014.

- [43] **Detecting objects using Deformation Dictionaries.**
B. Hariharan, C. L. Zitnick, P. Dollár.
Computer Vision and Pattern Recognition (CVPR), 2014.
- [44] **Using k-poselets for Detecting People and Localizing their Keypoints.**
G. Gkioxari, B. Hariharan, R. Girshick, J. Malik.
Computer Vision and Pattern Recognition (CVPR), 2014.
- [45] **A Data Driven Approach for Algebraic Loop Invariants.**
R. Sharma, S. Gupta, B. Hariharan, A. Aiken, P. Liang, A. V. Nori.
European Symposium on Programming (ESOP), 2013.
- [46] **Verification as learning geometric concepts.**
R. Sharma, S. Gupta, B. Hariharan, A. Aiken, A. V. Nori.
Static Analysis Symposium (SAS), 2013.
- [47] **Discriminative decorrelation for clustering and classification.**
B. Hariharan, J. Malik, D. Ramanan.
European Conference on Computer Vision (ECCV), 2012.
- [48] **Semantic segmentation using regions and parts.**
P. Arbeláez, B. Hariharan, C. Gu, S. Gupta, L. Bourdev, J. Malik.
Computer Vision and Pattern Recognition (CVPR), 2012 (**Oral**).
- [49] **Semantic contours from inverse detectors.**
B. Hariharan, P. Arbeláez, L. Bourdev, S. Maji, J. Malik.
International Conference on Computer Vision (ICCV), 2011.
- [50] **Large scale max- margin multilabel classification with priors.**
B. Hariharan, L. Zelnik-Manor, S. V. N. Vishwanathan, M. Varma.
International Conference on Machine Learning (ICML), 2010.

Peer-Reviewed Journal Publications

- [A] **LDLS: 3-D Object Segmentation Through Label Diffusion From 2-D Images.**
B. H. Wang, W. L. Chao, Y. Wang, B. Hariharan, K. Q. Weinberger, & M. Campbell (2019).
IEEE Robotics and Automation Letters, 4(3), 2902-2909.
- [B] **Cloud-hosted intelligence for real-time IoT applications.**
K Birman, B Hariharan, C De Sa
In *ACM SIGOPS Operating Systems Review* (**Invited paper**)
- [C] **Object Instance Segmentation and Fine-grained Localization using Hypercolumns.**
B. Hariharan, P. Arbeláez, R. Girshick, J. Malik. In *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2016. (**Invited paper**)
- [D] **Multi-Task Learning for Straggler Avoiding Predictive Job Scheduling.**
N. J. Yadwadkar, B. Hariharan, J. Gonzales, R. Katz.
In *Journal of Machine Learning Research (JMLR)*, 2016.

[E] **The three R's of computer vision: Recognition, reconstruction and reorganization.**

J Malik, P Arbeláez, J Carreira, K Fragkiadaki, R Girshick, G Gkioxari, Saurabh Gupta, Bharath Hariharan, Abhishek Kar, Shubham Tulsiani.

In *Pattern Recognition Letters*, 2016. (Invited paper)

[F] **Efficient max-margin multi-label classification with applications to zero-shot learning.**

B. Hariharan, S. V. N. Vishwanathan, M. Varma.

In *Machine Learning*, 2012.

AWARDS

- NSF CAREER 2022
- Excellence in Teaching award, 2019 - 2020.
- Microsoft Research Fellowship, 2013.
- Outstanding Graduate Student Instructor Award, 2011.
- Berkeley Graduate Student Fellowship, 2010.

FUNDING

- NSF
- DARPA
- IARPA

INVITED TALKS

- Invited keynote at the CVPR 2022 Workshop on Fair, Data-Efficient and Trusted Computer Vision
- Invited talk and panel at the S2D-OLAD workshop at ICLR, Spring 2021.
- VASC seminar at CMU, Spring 2021.
- TUM AI Lecture, Fall 2020.
- Invited talk at UC Berkeley, Spring 2021.
- Invited talk at Google research, Spring 2021.
- Invited talk at Amazon, Fall 2021.
- Invited talk at MIT, Spring 2020.
- Invited talk at Rochester Institute of Technology, Fall 2018.
- AFRL Special Topics in Machine Learning Summer Symposium at Griffiss Institute, Fall 2018.
- Machine Learning and Friends Lunch, University of Massachusetts, Amherst, MA, Fall 2018.
- Fifth workshop on Fine-grained Visual Categorization (FGVC5) held at CVPR, 2017.

INVITED REVIEWING AND OTHER SERVICE

- Invited Meta-reviewer for ICML, 2022
- Invited SPC for International Joint Conferences on Artificial Intelligence (IJCAI), 2020
- Invited meta-reviewer for European Conference for Computer Vision (ECCV), 2020.
- Invited meta-reviewer (responsible for managing reviewers for 30 papers) for Computer Vision and Pattern Recognition (CVPR), 2019.

- Invited meta-reviewer (responsible for managing reviewers for 30 papers) for International Conference on Computer Vision (ICCV), 2019.
- Invited reviewer for
 - The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017, 2018, 2019, 2021, 2022.
 - The International Conference on Computer Vision (ICCV) 2013, 2017.
 - The European Conference on Computer Vision (ECCV), 2018.
 - The Neural Information Processing Conference (NIPS), 2013.
 - The ACM Special Interest Group on Graphics (SIGGRAPH), 2017.
 - The ACM Special Interest Groups on Graphics, Asia (SIGGRAPH-Asia), 2017.
 - The International Conference on Machine Learning (ICML), 2013.
 - The British Machine Vision Conference (BMVC), 2017.
 - The International World-Wide Web Conference (WWW), 2017.
 - Computer Vision and Image Understanding (Elsevier).
 - Nature Communications.
- Invited Special Program Committee (SPC) Member SPC for Association for the Advancement of Artificial Intelligence (AAAI), 2018.
- Co-organizer for the Perceptual Organization in Computer Vision Workshop, ECCV 2018.
- Outstanding Reviewer Award for IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.
- Outstanding Reviewer Award for European Conference on Computer Vision (ECCV), 2014.
- Outstanding Reviewer Award for IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015.

TEACHING

- CS 6670 (Graduate Computer Vision, **Enrollment ~ 60**): Fall 2017, 2018, 2019, 2021.
- CS 4670/5670 (Undergraduate Computer Vision, **Enrollment ~ 300**): Spring 2018, 2019, 2020, 2021, 2022.

GRADUATED PHD. STUDENTS

- Davis Wertheimer (Currently IBM Watson)
- Bram Wallace (Applied Math, currently Salesforce Research)
- Yan Wang (w/ Kilian Weinberger, currently Waymo)

PHD. STUDENTS

- Cheng Perng Phoo
- Luming Tang
- Ruojin Cai (w/ Noah Snavely)
- Utkarsh Mall (w/ Kavita Bala)
- Guandao Yang (w/ Serge Belongie)
- Qianqian Wang (w/ Noah Snavely)
- Yurong You (w/ Kilian Weinberger)
- Chinasa Okolo (w/ Nicola Dell)

MS STUDENTS

- Ziyang Wu
- Noam Eshed
- Matthew Wallingford (now PhD student at UW)

UNDERGRADUATE RESEARCHERS ADVISED¹

- Irene Soon (now PhD student at UPenn)
- Guandao Yang (now PhD student at Cornell)
- Zhiqiu Lin (now PhD student at CMU)
- Jang Hyun Cho (now PhD student at UT Austin)
- Tristan Engst (now PhD student at Simon Fraser University)
- Zeqi Gu (now PhD student at Cornell)

INTERNAL SERVICE

- PhD Admissions committee 2017-18
- PhD Requirements committee 2017-18
- PhD Admissions committee 2018-19
- Faculty recruiting committee 2019-20
- Colloquium committee 2020 - 21

¹ Only includes students under direct supervision who went/plan to go to grad school