

# BHARATH HARIHARAN

[bharathh.cs.cornell.edu](mailto:bharathh.cs.cornell.edu)  
<https://www.cs.cornell.edu/~bharathh/>

March 5, 2025

## EMPLOYMENT

Associate Professor                      2024 - Present  
Cornell University

Assistant Professor                      2017 - 2024  
Cornell University

Postdoctoral Researcher                2015 - 2017  
Facebook AI Research

## EDUCATION

PhD    2015  
University of California, Berkeley  
Advisor: *Jitendra Malik*

BTech    2010  
IIT Delhi

## AWARDS

- PAMI Young Researcher Award, 2022
- NSF CAREER
- Excellence in Teaching award, 2019 - 2020
- Microsoft Research Fellowship, 2013.

- Outstanding Graduate Student Instructor Award, 2011. • Berkeley Graduate Student Fellowship, 2010.
- President’s Gold Medal, IIT Delhi, 2010.

## INVITED TALKS

- Invited keynote at the CVPR 2024 Workshop on Safe Artificial Intelligence for All Domains (SAIAD).
- Invited talk at the CVPR 2024 Workshop on Visual Prompting
- VASC seminar at CMU, Fall 2023.
- 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. 1
- 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

## PUBLICATIONS

### Peer-reviewed Conference Papers

- *3D Synthesis for Architectural Design*([link](#))  
I-Ting Tsai, Bharath Hariharan  
In WACV, 2025.

- *Scale-aware Recognition in Satellite Images under Resource Constraints*([link](#))  
Shreelekha Revankar, Cheng Perng Phoo, Utkarsh Mall, Bharath Hariharan, Kavita Bala  
In ICLR, 2025.
- *Counter-Current Learning: A Biologically Plausible Dual Network Approach for Deep Learning*([link](#))  
Chia-Hsiang Kao, Bharath Hariharan  
In NeurIPS, 2024.
- *AllClear: A Comprehensive Dataset and Benchmark for Cloud Removal in Satellite Imagery*([link](#))  
Hangyu Zhou\*, Chia-Hsiang Kao\*, Cheng Perng Phoo, Utkarsh Mall, Bharath Hariharan, Kavita Bala  
In NeurIPS (Datasets and Benchmarks), 2024.
- *MegaScenes: Scene-Level View Synthesis at Scale*([link](#))  
Joseph Tung, Gene Chou, Ruojin Cai, Guandao Yang, Kai Zhang, Gordon Wetzstein, Bharath Hariharan, Noah Snavely  
In ECCV, 2024.
- *MOD-UV: Learning Mobile Object Detectors from Unlabeled Videos*([link](#))  
Yihong Sun, Bharath Hariharan  
In ECCV, 2024.
- *Remote sensing vision-language foundation models without annotations via ground remote alignment*([link](#))  
Utkarsh Mall, Cheng Perng Phoo, Meilin Kelsey Liu, Carl Vondrick, Bharath Hariharan, Kavita Bala  
In ICLR, 2024.
- *Reward Finetuning for Faster and More Accurate Unsupervised Object Discovery*([link](#))  
Katie Z Luo\*, Zhenzhen Liu\*, Xiangyu Chen\*, Yurong You, Cheng Perng Phoo, Sagie Benaim, Mark Campbell, Wen Sun, Bharath Hariharan, Kilian Q. Weinberger  
In NeurIPS, 2023.
- *Dynamo-Depth: Fixing Unsupervised Depth Estimation for Dynamical Scenes*([link](#))  
Yihong Sun, Bharath Hariharan  
In NeurIPS, 2023.
- *Tracking Everything Everywhere All at Once*([link](#))  
Qianqian Wang, Yen-Yu Chang, Ruojin Cai, Zhengqi Li, Bharath Hariharan, Aleksander Holynski, Noah Snavely  
In ICCV, 2023(**Oral, Best Student Paper**).
- *Emergent Correspondence from Image Diffusion*([link](#))  
Luming Tang, Menglin Jia, Qianqian Wang, Cheng Phoo, Bharath Hariharan  
In NeurIPS, 2023.

- *Distilling from Similar Tasks for Transfer Learning on a Budget*([link](#))  
Kenneth Borup, Cheng Perng Phoo, Bharath Hariharan  
In ICCV, 2023.
- *Doppelgangers: Learning to Disambiguate Images of Similar Structures*([link](#))  
Ruojin Cai, Joseph Tung, Qianqian Wang, Hadar Averbuch-Elor, Bharath Hariharan, Noah Snavely  
In ICCV, 2023(**Oral**).
- *Change-Aware Sampling and Contrastive Learning for Satellite Images*([link](#))  
Utkarsh Mall, Bharath Hariharan, Kavita Bala  
In CVPR, 2023.
- *Change Event Dataset for Discovery from Spatio-temporal Remote Sensing Imagery*([link](#))  
Utkarsh Mall, Bharath Hariharan, Kavita Bala  
In NeurIPS (Datasets and Benchmarks track), 2022.
- *Polynomial Neural Fields for Subband Decomposition and Manipulation*([link](#))  
Gu, ao Yang, Sagie Benaim, Varun Jampani, Kyle Genova, Jonathan T. Barron, Thomas Funkhouser, Bharath Hariharan, Serge Belongie  
In NeurIPS, 2022.
- *Unsupervised Adaptation from Repeated Traversals for Autonomous Driving*([link](#))  
Yurong You, Cheng Perng Phoo, Katie Z Luo, Travis Zhang, Wei-Lun Chao, Bharath Hariharan, Mark Campbell, Kilian Q. Weinberger  
In NeurIPS, 2022.
- *Visual Prompt Tuning*([link](#))  
Menglin Jia, Luming Tang, Bor-Chun Chen, Claire Cardie, Serge Belongie, Bharath Hariharan, Ser-Nam Lim  
In ECCV, 2022.
- *Exploiting Playbacks in Unsupervised Domain Adaptation for 3D Object Detection*([link](#))  
Yurong You, Carlos Andres Diaz-Ruiz, Yan Wang, Wei-Lun Chao, Bharath Hariharan, Mark Campbell, Kilian Weinberger  
In ICRA, 2022.
- *Learning to Detect Mobile Objects from LiDAR Scans Without Labels*([link](#))  
Yurong You, Katie Luo, Cheng Perng Phoo, Wei-Lun Chao, Wen Sun, Bharath Hariharan, Mark Campbell, Kilian Weinberger  
In CVPR, 2022.
- *Hindsight is 20/20: Leveraging past traversals to aid 3D perception*([link](#))  
Yurong You, Katie Luo, Xiangyu Chen, Junan Chen, Wei-Lun Chao, Wen Sun, Bharath Hariharan, Mark Campbell, Kilian Weinberger  
In ICLR, 2022.

- *Geometry Processing using Neural Fields*([link](#))  
Guandao Yang, Serge Belongie, Bharath Hariharan, Vladlen Koltun  
In NeurIPS, 2021.
- *Coarsely-labeled Data for Better Few-shot Transfer*([link](#))  
Cheng Perng Phoo, Bharath Hariharan  
In ICCV, 2021.
- *Field Guide-inspired Zero-Shot Learning*([link](#))  
Utkarsh Mall, Bharath Hariharan, Kavita Bala  
In ICCV, 2021.
- *Extreme Rotation Estimation using Dense Correlation Volumes*([link](#))  
Ruojin Cai, Hadar Averbuch-Elor, Bharath Hariharan, Noah Snavely  
In CVPR, 2021.
- *Stay Positive: Non-Negative Image Synthesis for Augmented Reality*([link](#))  
Katie Luo, Gu, ao Yang, Wenqi Xian, Harald Haraldsson, Bharath Hariharan, Serge Belongie  
In CVPR, 2021.
- *Can We Characterize Tasks Without Labels or Features?*([link](#))  
Bram Wallace, Ziyang Wu, Bharath Hariharan  
In CVPR, 2021.
- *Few-Shot Classification with Feature Map Reconstruction Networks*([link](#))  
Davis Wertheimer, Luming Tang, Bharath Hariharan  
In CVPR, 2021.
- *PiCIE: Unsupervised Semantic Segmentation using Invariance and Equivariance in Clustering*([link](#))  
Jang Hyun Cho, Utkarsh Mall, Kavita Bala, Bharath Hariharan  
In CVPR, 2021.
- *Self-training For Few-shot Transfer Across Extreme Task Differences*([link](#))  
Cheng Perng Phoo, Bharath Hariharan  
In ICLR, 2021.
- *Wasserstein Distances for Stereo Depth Estimation*([link](#))  
Divyansh Garg, Yan Wang, Bharath Hariharan, Mark Campbell, Kilian Q Weinberger, Wei-Lun Chao  
In NeurIPS, 2020.
- *Learning Gradient Fields for Shape Generation*([link](#))  
Ruojin Cai, Gu, ao Yang, Hadar Averbuch-Elor, Zekun Hao, Serge Belongie, Noah Snavely, Bharath Hariharan  
In ECCV, 2020.

- *When Does Self-supervision Improve Few-shot Learning?*([link](#))  
Jong-Chyi Su, Subhransu Maji, Bharath Hariharan  
In ECCV, 2020.
- *Extending and Analyzing Self-Supervised Learning Across Domains*([link](#))  
Bram Wallace, Bharath Hariharan  
In ECCV, 2020.
- *Learning Feature Descriptors using Camera Pose Supervision*([link](#))  
Qianqian Wang, Xiaowei Zhou, Bharath Hariharan, Noah Snavely  
In ECCV, 2020.
- *Fashionpedia: Ontology Segmentation and an Attribute Localization Dataset*([link](#))  
Menglin Jia, Mengyun Shi, Mikhail Sirotenko, Yin Cui, Bharath Hariharan, Claire Cardie, Hartwig Adam, Serge Belongie  
In ECCV, 2020.
- *Revisiting Pose-Normalization for Fine-Grained Few-Shot Recognition*([link](#))  
Luming Tang, Davis Wertheimer, Bharath Hariharan  
In CVPR, 2020.
- *Train in Germany Test in The USA: Making 3D Object Detectors Generalize*([link](#))  
Yan Wang, Xiangyu Chen, Yurong You, Li Erran Li, Bharath Hariharan, Mark Campbell, Kilian Q. Weinberger, Wei-Lun Chao  
In CVPR, 2020.
- *End-to-end Pseudo-LiDAR for Image-Based 3D Object Detection*([link](#))  
Rui Qian, Divyansh Garg, Yan Wang, Yurong You, Serge Belongie, Bharath Hariharan, Mark Campbell, Kilian Q. Weinberger, , Wei-Lun Chao  
In CVPR, 2020.
- *Pseudo-lidar++: Accurate depth for 3d object detection in autonomous driving*([link](#))  
Yurong You, Yan Wang, Wei-Lun Chao, Divyansh Garg, Geoff Pleiss, Bharath Hariharan, Mark Campbell, , Kilian Weinberger  
In ICLR, 2020.
- *PointFlow: 3D Point Cloud Generation with Continuous Normalizing Flows*([link](#))  
Gu, ao Yang, Xun Huang, Zekun Hao, Ming-Yu Liu, Serge Belongie, Bharath Hariharan  
In ICCV, 2019.
- *Few-Shot Generalization for Single-Image 3D Reconstruction via Prior*([link](#))  
Bram Wallace, Bharath Hariharan  
In ICCV, 2019.
- *On the impact of neural network architecture on the efficacy of knowledge distillation*([link](#))  
Jang Hyun Cho, Bharath Hariharan  
In ICCV, 2019.

- *GeoStyle: Discovering Fashion Trends and Events*([link](#))  
Utkarsh Mall, Kevin Matzen, Bharath Hariharan, Noah Snavely, Kavita Bala  
In ICCV, 2019.
- *Few-shot Learning with Localization in Realistic Settings*([link](#))  
Davis Wertheimer, Bharath Hariharan  
In CVPR, 2019.
- *Pseudo-LiDAR from Visual Depth Estimation: Bridging the Gap in 3D Object Detection for Autonomous Driving*([link](#))  
Yan Wang, Wei-Lun Chao, Divyansh Garg, Bharath Hariharan, Mark Campbell, Kilian Q. Weinberger  
In CVPR, 2019.
- *Design Mining for Minecraft Architecture*([link](#))  
Euisun Yoon, Erik Andersen, Bharath Hariharan, Ross Knepper  
In Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2018.
- *Learning Single-View 3D Reconstruction with Limited Pose Supervision*([link](#))  
Gu, ao Yang, Yin Cui, Serge Belongie, Bharath Hariharan  
In ECCV, 2018.
- *Low-shot Learning from Imaginary Data*([link](#))  
Yu-Xiong Wang, Ross Girshick, Martial Herbert, Bharath Hariharan  
In CVPR, 2018.
- *Low-shot learning with large-scale diffusion*([link](#))  
Matthijs Douze, Arthur Szlam, Bharath Hariharan, Hervé Jégou  
In CVPR, 2018.
- *Resource Aware Person Re-identification across Multiple Resolutions*([link](#))  
Yan Wang, Lequn Wang, Yurong You, Xu Zou, Vincent Chen, Serena Li, Gao Huang, Bharath Hariharan, Kilian Q. Weinberger  
In CVPR, 2018.
- *Low-shot Visual Recognition by Shrinking and Hallucinating Features*([link](#))  
Bharath Hariharan, Ross Girshick  
In ICCV, 2017.
- *Inferring and Executing Programs for Visual Reasoning*([link](#))  
Justin Johnson, Bharath Hariharan, Laurens van der Maaten, Judy Hoffman, Li Fei-Fei, C. Lawrence Zitnick, Ross Girshick  
In ICCV, 2017.
- *Learning Features by Watching Objects Move*([link](#))  
Deepak Pathak, Ross Girshick, Piotr Dollár, Trevor Darrell, Bharath Hariharan  
In CVPR, 2017.

- *CLEVR: A Diagnostic Dataset for Compositional Language and Elementary Visual Reasoning*([link](#))  
Justin Johnson, Bharath Hariharan, Laurens van der Maaten, Li Fei-Fei, C. Lawrence Zitnick, Ross Girshick  
In CVPR, 2017.
- *Feature Pyramid Networks for Object Detection*([link](#))  
Tsung-Yi Lin, Piotr Dollár, Ross Girshick, Kaiming He, Bharath Hariharan, Serge Belongie  
In CVPR, 2017.
- *Iterative Instance Segmentation*([link](#))  
Ke Li, Bharath Hariharan, Jitendra Malik  
In CVPR, 2016.
- *DeepBox: Learning Objectness with Convolutional Networks*([link](#))  
Weicheng Kuo, Bharath Hariharan, Jitendra Malik  
In ICCV, 2015.
- *Hypercolumns for Object Segmentation and Fine-grained Localization*([link](#))  
Bharath Hariharan, Pablo Arbeláez, Ross Girshick, Jitendra Malik  
In CVPR, 2015.
- *Simultaneous Detection and Segmentation*([link](#))  
Bharath Hariharan, Pablo Arbeláez, Ross Girshick, Jitendra Malik  
In ECCV, 2014.
- *Detecting objects using Deformation Dictionaries*([link](#))  
Bharath Hariharan, Larry Zitnick, Piotr Dollár  
In CVPR, 2014.
- *Using k-poselets for detecting people and localizing their keypoints*([link](#))  
Georgia Gkioxari, Bharath Hariharan, Ross Girshick, Jitendra Malik  
In CVPR, 2014.
- *Discriminative decorrelation for clustering and classification*([link](#))  
Bharath Hariharan, Jitendra Malik, Deva Ramanan  
In ECCV, 2012.
- *Semantic segmentation using regions and parts*([link](#))  
Pablo Arbeláez, Bharath Hariharan, Chunhui Gu, Saurabh Gupta, Lubomir Bourdev, Jitendra Malik  
In CVPR, 2012.
- *Semantic contours from inverse detectors*([link](#))  
Bharath Hariharan, Pablo Arbeláez, Lubomir Bourdev, Subhransu Maji, Jitendra Malik  
In ICCV, 2011.



- *Large scale max-margin multi-label classification with priors*([link](#))  
Bharath Hariharan, Lihi Zelnik-Manor, S. V. N. Vishwanathan, Manik Varma  
In ICML, 2010.
- *Selecting the Best VM across Multiple Public Clouds: A Data-Driven Performance Modeling Approach*([link](#))  
Neeraja J. Yadwadkar, Bharath Hariharan, Joseph E Gonzalez, Burton Smith, R, y Katz  
In SoCC, 2017.
- *Faster Jobs in Distributed Data Processing using Multi-Task Learning*([link](#))  
Neeraja J. Yadwadkar, Bharath Hariharan, Joseph Gonzalez, R, y Katz  
In SDM, 2015.
- *Verification as learning geometric concepts*([link](#))  
Rahul Sharma, Saurabh Gupta, Bharath Hariharan, Alex Aiken, Aditya Nori  
In Static Analysis Symposium (SAS), 2013.
- *A Data Driven Approach for Algebraic Loop Invariants*([link](#))  
Rahul Sharma, Saurabh Gupta, Bharath Hariharan, Alex Aiken, Percy Liang, Aditya Nori  
In European Symposium on Programming (ESOP), 2013.

#### Peer-reviewed Journal Papers

- *Object Instance Segmentation and Fine-grained Localization using Hypercolumns*([link](#))  
Bharath Hariharan, Pablo Arbeláez, Ross Girshick, Jitendra Malik  
In TPAMI, 2015.
- *Efficient max-margin multi-label classification with applications to zero-shot learning*([link](#))  
Bharath Hariharan, S. V. N. Vishwanathan, Manik Varma  
In Machine Learning, 2012.
- *Multi-Task Learning for Straggler Avoiding Predictive Job Scheduling*([link](#))  
Neeraja J. Yadwadkar, Bharath Hariharan, Joseph Gonzales, R, y Katz  
In JMLR, 2016.
- *Machine Learning (ML) for Tracking Fashion Trends: Documenting the Frequency of the Baseball Cap on Social Media and the Runway*([link](#))  
Rachel Rose Getman, Denise Nicole Green, Kavita Bala, Utkarsh Mall, Nehal Rawat, Sonia Appasamy, Bharath Hariharan  
In Clothing and Textiles Research Journal, 2020.
- *A semi-automated machine learning-aided approach to quantitative analysis of centrosomes and microtubule organization*([link](#))  
Divya Ganapathi Sankaran, Alex, er J Stemm-Wolf, Bailey L McCurdy, Bharath Hariharan, Chad G Pearson  
In Journal of Cell Science, 2020.

## GRADUATED PHD STUDENTS

- Yan Wang (co-advised with Killian Weinberger), graduated 2021.  
Title: *Pseudo-LiDAR: Camera-based 3D object detection for autonomous driving*.  
Current employment: *NVIDIA*
- Davis Wertheimer, graduated 2022.  
Title: *Improving Flexibility and Performance in Metric-Based Few-Shot Classification*  
Current employment: *IBM*
- Bram Wallace, graduated 2022  
Title: *Beyond Vanilla Finetuning: Approaches to Maximize the Benefits of Pretraining in Computer Vision*  
Current employment: *OpenAI*
- Guandao Yang (co-advised with Serge Belongie), graduated 2023  
Title: *Geometry Processing with Neural Fields*  
Current employment: Postdoc at *Stanford* with Leo Guibas and Gordon Wetzstein
- Yurong You (co-advised with Kilian Weinberger), graduated 2023  
Title: *Enhancing 3D Perception with Unlabeled Repeated Historical Data for Autonomous Vehicles*  
Current employment: *NVIDIA*
- Utkarsh Mall (co-advised with Kavita Bala), graduated 2023  
Title: *Visual Discovery from Spatio-Temporal Imagery*  
Current employment: Postdoc at *Columbia* with Carl Vondrick.
- Qianqian Wang (co-advised with Noah Snavely), graduated 2023  
Title: *Modeling the 3D World and its Motion*  
Current employment: Postdoc at *Berkeley* with Angjoo Kanazawa and Alyosha Efros.
- Luming Tang, graduated 2024  
Title: *Mining Visual Knowledge from Pre-trained Models*  
Current employment: *Google*
- Cheng Perng Phoo, graduated 2024  
Title: *Toward Perception Models Beyond Internet Applications*  
Current employment: Postdoc at *Apple*

## CURRENT PHD STUDENTS

- Ruojin Cai (with Noah Snavely)
- Gemmechu Hassena (with Steve Marschner)
- Aditya Chetan

- Yihong Sun
- Bradon Thymes
- I-Ting Tsai
- Lekha Revankar (with Kavita Bala)
- Chia-Hsiang Kao (with Kavita Bala)
- Kuan Wei Huang

## TEACHING

Course	Term	Enrolment
Graduate computer vision (CS 6670)	Fall '17	31
Undergraduate computer vision (CS 4670)	Spring '18	176
Graduate computer vision (CS 6670)	Fall '18	63
Undergraduate computer vision (CS 4670)	Spring '19	248
Graduate computer vision (CS 6670)	Fall '19	68
Undergraduate computer vision (CS 4670)	Spring '20	298
Undergraduate computer vision (CS 4670)	Spring '21	298
Graduate computer vision (CS 6670)	Fall '21	57
Undergraduate computer vision (CS 4670)	Spring '22	307
Graduate computer vision (CS 6670)	Fall '22	53
Undergraduate computer vision (CS 4670)	Spring '23	332
Graduate computer vision (CS 6670)	Fall '23	58
Undergraduate computer vision (CS 4670)	Spring '24	292

- Sample material for undergraduate course [here](#).
- Sample material for graduate course [here](#).

## INVITED REVIEWING AND OTHER SERVICE

- Invited Senior Area Chair for
  - International Conference on Learning Representations (ICLR) 2025.
  - Computer Vision and Pattern Recognition (CVPR) 2024.
- Invited Area Chair/Meta-reviewer for
  - European Conference on Computer Vision (ECCV) 2020, 2022
  - Computer Vision and Pattern Recognition (CVPR) 2019, 2023
  - NeurIPS 2024

- International Conference on Machine Learning (ICML) 2022
- International Joint Conferences on Artificial Intelligence (IJCAI), 2020
- Association for the Advancement of Artificial Intelligence (AAAI), 2018.
- 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, 2024.
  - Winter Applications in Computer Vision (WACV), 2024.
  - The ACM Special Interest Group on Graphics (SIGGRAPH), 2017.
  - The ACM Special Interest Groups on Graphics, Asia (SIGGRAPH-Asia), 2017.
  - The British Machine Vision Conference (BMVC), 2017.
  - The International World-Wide Web Conference (WWW), 2017.
  - The Neural Information Processing Conference (NIPS), 2013.
  - The International Conference on Machine Learning (ICML), 2013.
  - Computer Vision and Image Understanding (Elsevier).
  - Nature Communications.
- 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.