Bharath Hariharan

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Education

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

BTech — 2010
Indian Institute of Technology
Delhi

Employment

Assistant Professor — 2017 - Present
Cornell University

Postdoc — 2015 - 2017
Facebook Inc. (Now Meta)

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 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 Massachussetts, Amherst, MA, Fall 2018.
- Fifth workshop on Fine-grained Visual Categorization (FGVC5) held at CVPR, 2017.

Publications

Peer-reviewed Conference Publications

- *Change-Aware Sampling and Contrastive Learning for Satellite Images.*
  Utkarsh Mall, **Bharath Hariharan**, Kavita Bala.
  In CVPR 2023.

- *Change Event Dataset for Discovery from Spatio-temporal Remote Sensing Imagery.*
  Utkarsh Mall, **Bharath Hariharan**, Kavita Bala.
  In NeurIPS (Datasets and Benchmarks track) 2022(**Featured**).

- *Polynomial Neural Fields for Subband Decomposition and Manipulation.*
  Guandao 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.*
  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.*
  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.*
  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.*
  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.*
  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.*
  Guandao Yang, Serge Belongie, **Bharath Hariharan**, Vladlen Koltun.
  In NeurIPS 2021.

- *Coarsely-labeled Data for Better Few-shot Transfer.*
  Cheng Perng Phoo, **Bharath Hariharan**.
  In ICCV 2021.

- *Field Guide-inspired Zero-Shot Learning.*
  Utkarsh Mall, **Bharath Hariharan**, Kavita Bala.
  In ICCV 2021.

- *Extreme Rotation Estimation using Dense Correlation Volumes.*
  Ruojin Cai, Hadar Averbuch-Elor, **Bharath Hariharan**, Noah Snavely.
  In CVPR 2021.

- *Stay Positive: Non-Negative Image Synthesis for Augmented Reality.*
  Katie Luo, Guandao Yang, Wenqi Xian, Harald Haraldsson, **Bharath Hariharan**, Serge Belongie.
  In CVPR 2021(**Oral**).

- *Can We Characterize Tasks Without Labels or Features?.*
  Bram Wallace, Ziyang Wu, **Bharath Hariharan**.
  In CVPR 2021.

- *Few-Shot Classification with Feature Map Reconstruction Networks.*
  Davis Wertheimer, Luming Tang, **Bharath Hariharan**.
  In CVPR 2021.

- *PiCIE: Unsupervised Semantic Segmentation using Invariance and Equivariance in Clustering.*
  Jang Hyun Cho, Utkarsh Mall, Kavita Bala, **Bharath Hariharan**.
  In CVPR 2021.

- *Self-training For Few-shot Transfer Across Extreme Task Differences.*
  Cheng Perng Phoo, **Bharath Hariharan**.
  In ICLR 2021(**Oral**).

- *Wasserstein Distances for Stereo Depth Estimation.*
  Divyansh Garg, Yan Wang, **Bharath Hariharan**, Mark Campbell, Kilian Q Weinberger, Wei-Lun Chao.
  In NeurIPS 2020(**Oral**).

- *Learning Gradient Fields for Shape Generation.*
  Ruojin Cai, Guandao Yang, Hadar Averbuch-Elor, Zekun Hao, Serge Belongie, Noah Snavely, **Bharath Hariharan**.
  In ECCV 2020(**Spotlight**).

- *When Does Self-supervision Improve Few-shot Learning?.*
  Jong-Chyi Su, Subhransu Maji, **Bharath Hariharan**.
  In ECCV 2020.

- *Extending and Analyzing Self-Supervised Learning Across Domains.*
  Bram Wallace, **Bharath Hariharan**.
  In ECCV 2020.

- *Learning Feature Descriptors using Camera Pose Supervision.*
  Qianqian Wang, Xiaowei Zhou, **Bharath Hariharan**, Noah Snavely.
  In ECCV 2020(**Oral**).

- *Fashionpedia: Ontology, Segmentation, and an Attribute Localization Dataset.*
  Menglin Jia, Mengyun Shi, Mikhail Sirotenko, Yin Cui, **Bharath Hariharan**, Claire Cardie, Hartwig Adam, Serge Belongie.
  In ECCV 2020(**Oral**).

- *Revisiting Pose-Normalization for Fine-Grained Few-Shot Recognition.*
  Luming Tang, Davis Wertheimer, **Bharath Hariharan**.
  In CVPR 2020.

- *Train in Germany, Test in The USA: Making 3D Object Detectors Generalize.*
  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.*
  Rui Qian, Divyansh Garg, Yan Wang, Yurong You, Serge Belongie, **Bharath Hariharan**, Mark Campbell, Kilian Q. Weinberger, and Wei-Lun Chao.
  In CVPR 2020.

- *Pseudo-lidar++: Accurate depth for 3d object detection in autonomous driving.*
  Yurong You, Yan Wang, Wei-Lun Chao, Divyansh Garg, Geoff Pleiss, **Bharath Hariharan**, Mark Campbell, and Kilian Weinberger.
  In ICLR 2020.

- *PointFlow: 3D Point Cloud Generation with Continuous Normalizing Flows.*
  Guandao Yang*, Xun Huang*, Zekun Hao, Ming-Yu Liu, Serge Belongie, **Bharath Hariharan**.
  In ICCV 2019(**Oral**).

- *Few-Shot Generalization for Single-Image 3D Reconstruction via Prior.*
  Bram Wallace, **Bharath Hariharan**.
  In ICCV 2019.

- *On the impact of neural network architecture on the efficacy of knowledge distillation.*
  Jang Hyun Cho, **Bharath Hariharan**.
  In ICCV 2019.

- *GeoStyle: Discovering Fashion Trends and Events.*
  Utkarsh Mall, Kevin Matzen, **Bharath Hariharan**, Noah Snavely, Kavita Bala.
  In ICCV 2019.

- *Few-shot Learning with Localization in Realistic Settings.*
  Davis Wertheimer, **Bharath Hariharan**.
  In CVPR 2019(**Oral**).

- *Pseudo-LiDAR from Visual Depth Estimation: Bridging the Gap in 3D Object Detection for Autonomous Driving.*
  Yan Wang, Wei-Lun Chao, Divyansh Garg, **Bharath Hariharan**, Mark Campbell, Kilian Q. Weinberger.
  In CVPR 2019.

- *Design Mining for Minecraft Architecture.*
  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.*
  Guandao Yang, Yin Cui, Serge Belongie, **Bharath Hariharan**.
  In ECCV 2018.

- *Low-shot Learning from Imaginary Data.*
  Yu-Xiong Wang, Ross Girshick, Martial Herbert, **Bharath Hariharan**.
  In CVPR 2018(**Spotlight**).

- *Low-shot learning with large-scale diffusion.*
  Matthijs Douze, Arthur Szlam, **Bharath Hariharan**, Herv¡e'¿ J¡e'¿gou.
  In CVPR 2018.

- *Resource Aware Person Re-identification across Multiple Resolutions.*
  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.*
  Bharath Hariharan, Ross Girshick.
  In ICCV 2017(**Spotlight**).

- *Inferring and Executing Programs for Visual Reasoning.*
  Justin Johnson, **Bharath Hariharan**, Laurens van der Maaten, Judy Hoffman, Li Fei-Fei, C. Lawrence Zitnick, Ross Girshick.
  In ICCV 2017(**Oral**).

- *Learning Features by Watching Objects Move.*
  Deepak Pathak, Ross Girshick, Piotr Doll¡a'¿r, Trevor Darrell, **Bharath Hariharan**.
  In CVPR 2017.

- *CLEVR: A Diagnostic Dataset for Compositional Language and Elementary Visual Reasoning.*
  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.*
  Tsung-Yi Lin, Piotr Doll¡a'¿r, Ross Girshick, Kaiming He, **Bharath Hariharan**, Serge Belongie.
  In CVPR 2017.

- *Iterative Instance Segmentation.*
  Ke Li, **Bharath Hariharan**, Jitendra Malik.

In CVPR 2016.

- *DeepBox: Learning Objectness with Convolutional Networks.*
  Weicheng Kuo, **Bharath Hariharan**, Jitendra Malik.
  In ICCV 2015.

- *Hypercolumns for Object Segmentation and Fine-grained Localization.*
  Bharath Hariharan, Pablo Arbel¡a'¿ez, Ross Girshick, Jitendra Malik.
  In CVPR 2015(**Oral**).

- *Simultaneous Detection and Segmentation.*
  Bharath Hariharan, Pablo Arbel¡a'¿ez, Ross Girshick, Jitendra Malik.
  In ECCV 2014.

- *Detecting objects using Deformation Dictionaries.*
  Bharath Hariharan, Larry Zitnick, Piotr Doll¡a'¿r.
  In CVPR 2014.

- *Using k-poselets for detecting people and localizing their keypoints.*
  Georgia Gkioxari*, Bharath Hariharan*, Ross Girshick, Jitendra Malik.
  In CVPR 2014.

- *Discriminative decorrelation for clustering and classification.*
  Bharath Hariharan, Jitendra Malik, Deva Ramanan.
  In ECCV 2012.

- *Semantic segmentation using regions and parts.*
  Pablo Arbel¡a'¿ez, **Bharath Hariharan**, Chunhui Gu, Saurabh Gupta, Lubomir Bourdev, Jitendra Malik.
  In CVPR 2012.

- *Semantic contours from inverse detectors.*
  Bharath Hariharan, Pablo Arbel¡a'¿ez, Lubomir Bourdev, Subhransu Maji, Jitendra Malik.
  In ICCV 2011.

- *Large scale max-margin multi-label classification with priors.*
  Bharath Hariharan, Lihi Zelnik-Manor, S. V. N. Vishwanathan, Manik Varma.
  In ICML 2010(**Oral**).

- *Selecting the Best VM across Multiple Public Clouds: A Data-Driven Performance Modeling Approach.*
  Neeraja J. Yadwadkar, **Bharath Hariharan**, Joseph E Gonzalez, Burton Smith, Randy Katz.

In SoCC 2017.

- *Faster Jobs in Distributed Data Processing using Multi-Task Learning.*
  Neeraja J. Yadwadkar, **Bharath Hariharan**, Joseph Gonzalez, Randy Katz.
  In SDM 2015(**Oral**).

- *Verification as learning geometric concepts.*
  Rahul Sharma, Saurabh Gupta, **Bharath Hariharan**, Alex Aiken, Aditya Nori.
  In Static Analysis Symposium (SAS) 2013.

- *A Data Driven Approach for Algebraic Loop Invariants.*
  Rahul Sharma, Saurabh Gupta, **Bharath Hariharan**, Alex Aiken, Percy Liang, Aditya Nori.
  In European Symposium on Programming (ESOP) 2013.

Peer-reviewed Journal Publications

- *Object Instance Segmentation and Fine-grained Localization using Hypercolumns.*
  Bharath Hariharan, Pablo Arbel¡a'¿ez, Ross Girshick, Jitendra Malik.
  In TPAMI 2015.

- *Efficient max-margin multi-label classification with applications to zero-shot learning.*
  Bharath Hariharan, S. V. N. Vishwanathan, Manik Varma.
  In Machine Learning 2012.

- *Multi-Task Learning for Straggler Avoiding Predictive Job Scheduling.*
  Neeraja J. Yadwadkar, **Bharath Hariharan**, Joseph Gonzales, Randy Katz.
  In JMLR 2016.

- *Machine Learning (ML) for Tracking Fashion Trends: Documenting the Frequency of the Baseball Cap on Social Media and the Runway.*
  Rachel Rose Getman, Denise Nicole Green, Kavita Bala, Utkarsh Mall, Nehal Rawat, Sonia Appasamy and Bharath Hariharan.
  In Clothing and Textiles Research Journal 2020.

- *A semi-automated machine learning-aided approach to quantitative analysis of centrosomes and microtubule organization.*
  Divya Ganapathi Sankaran, Alexander J Stemm-Wolf, Bailey L McCurdy, **Bharath Hariharan**, Chad G Pearson.
  In Journal of Cell Science 2020.

PhD Students

	Graduation Year	Employment after Cornell
Yan Wang (with Kilian Weinberger)	2021	Waymo
Davis Wertheimer	2022	IBM Research
Bram Wallace	2022	Salesforce Research
Guandao Yang	2023 (Expected)	Postdoc at Stanford
Utkarsh Mall	2023 (Expected)	Postdoc at Columbia
Qianqian Wang	2023 (Expected)	
Yurong You	2023 (Expected)	
Chinasa Okolo	2023 (Expected)	
Cheng Perng Phoo	2023 (Expected)	
Ruojin Cai (with Noah Snavely)		
Luming Tang		
Yihong Sun		
Aditya Chetan		

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, 2022.
- 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, 2023.
- 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.