

Judy Hoffman

CONTACT INFORMATION

Berkeley AI Research (*BAIR*)
University of California, Berkeley
Berkeley, CA 94720 USA

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RESEARCH INTERESTS

My research lies at the intersection of computer vision and machine learning. I develop learning algorithms which facilitate the transfer of information through unsupervised and semi-supervised model adaptation and generalization. My work reuses and shares information across visual environments and tasks, enabling learning systems to tackle real-world variation and scale while minimizing human supervision.

EDUCATION

University of California, Berkeley, August 2010 - August 2016
PhD, Electrical Engineering and Computer Science
Advised by Trevor Darrell

University of California, Berkeley August 2006 - May 2010
Bachelor of Science, Electrical Engineering and Computer Science Honors Program
Graduated with Department Honors
Advised by Ken Goldberg

BOOK CHAPTERS

[1] **Judy Hoffman**, Eric Tzeng, Trevor Darrell, Kate Saenko. “Simultaneous Transfer Across Domains and Tasks” In *Domain Adaptation in Computer Vision Applications*, Springer, 173-187, 2017.

JOURNAL PUBLICATIONS

[2] **Judy Hoffman**, Deepak Pathak, Eric Tzeng, Jonathan Long, Sergio Guadarrama, Trevor Darrell, and Kate Saenko. “Large Scale Visual Recognition through Adaptation using Joint Representation and Multiple Instance Learning”, *Journal of Machine Learning Research (JMLR), Special Issue on Multi Task Learning*, 2016.

[3] **Judy Hoffman**, Erik Rodner, Jeff Donahue, Brian Kulis, and Kate Saenko. “Asymmetric and Category Invariant Feature Transformations for Domain Adaptation”, *International Journal of Computer Vision (IJCV) Special Issue on Domain Adaptation*, 2014.

CONFERENCE PUBLICATIONS

[4] Liyue Shen, Serena Yeung, **Judy Hoffman**, Greg Mori, Li Fei-Fei. “Scaling Human-Object Interaction Recognition through Zero-Shot Learning”, *Winter Conference on Applications in Computer Vision (WACV)*, 2018.

[5] Zelun Luo, Yuliang Zou, **Judy Hoffman**, Li Fei-Fei. “Label Efficient Learning of Transferable Representations across Domains and Tasks”, *Neural Information Processing Systems (NIPS)*, 2017.

[6] Timnit Gebru, **Judy Hoffman**, Li Fei-Fei, “Fine-grained Recognition in the Wild: A Multi-Task Domain Adaptation Approach”, *International Conference in Computer Vision (ICCV)*, 2017.

[7] Justin Johnson, Bharath Hariharan, Laurens van der Maaten, **Judy Hoffman**, Li Fei-Fei, C. Lawrence Zitnick, Ross Girshick. “Inferring and Executing Programs for Visual Reasoning”, *International Conference in Computer Vision (ICCV)*, 2017. (Oral Presentation)

- [8] Eric Tzeng, **Judy Hoffman**, Kate Saenko, Trevor Darrell. “Adversarial Discriminative Domain Adaptation”, *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Hawaii, USA, 2017.
- [9] **Judy Hoffman**, Saurabh Gupta, Trevor Darrell. “Learning with Side Information through Modality Hallucination”, *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, USA, 2016. **(Spotlight Presentation)**
- [10] Saurabh Gupta, **Judy Hoffman**, Jitendra Malik. “Cross Modal Distillation for Supervision Transfer”, *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, USA, 2016.
- [11] Eric Tzeng*, Coline Devin*, **Judy Hoffman**, Chelsea Finn, Pieter Abbeel, Sergey Levine, Kate Saenko, Trevor Darrell. “Adapting deep visuomotor representations with weak pairwise constraints”, *International Workshop on the Algorithmic Foundations of Robotics (WAFR)*, 2016.
- [12] Xingchao Peng, **Judy Hoffman**, Stella Yu, Kate Saenko. “Fine-to-coarse Knowledge Transfer For Low-Res Image Classification”. *International Conference on Image Processing*, 2016.
- [13] **Judy Hoffman**, Saurabh Gupta, Jian Leong, Sergio Guadarrama, Trevor Darrell. “Cross-Modal Adaptation for RGB-D Detection”, *IEEE International Conference on Robotics and Automation (ICRA)*, Stockholm, Sweden, 2016.
- [14] Eric Tzeng*, **Judy Hoffman***, Trevor Darrell, Kate Saenko. “Simultaneous Deep Transfer Across Domains and Tasks”, *In Proc. International Conference on Computer Vision (ICCV)*, Santiago, Chile, 2015. *Equal Contribution
- [15] Damian Mowroca, Marcus Rohrbach, **Judy Hoffman**, Ronghang Hu, Kate Saenko, Trevor Darrell. “Spatial Semantic Regularisation for Large Scale Object Detection”, *In Proc. International Conference on Computer Vision (ICCV)*, Santiago, Chile, 2015.
- [16] **Judy Hoffman**, Deepak Pathak, Trevor Darrell, Kate Saenko. “Detector Discovery in the Wild: Joint Multiple Instance and Representation Learning,” *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Boston, USA, 2015.
- [17] **Judy Hoffman**, Sergio Guadarrama, Eric Tzeng, Ronghang Hu, Jeff Donahue, Ross Girshick, Trevor Darrell, and Kate Saenko. “LSDA: Large Scale Detection through Adaptation,” *In Proc. Neural Information Processing (NIPS)*, Montreal, Canada, 2014.
- [18] **Judy Hoffman**, Trevor Darrell, and Kate Saenko. “Continuous Manifold Based Adaptation for Evolving Visual Domains”, *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Ohio, USA, 2014.
- [19] Daniel Goehring, **Judy Hoffman**, Erik Rodner, Kate Saenko and Trevor Darrell. “Interactive Adaptation of Real-Time Object Detectors”, *In Proc. International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, 2014.
- [20] Jeff Donahue, Yangqing Jia, Oriol Vinyals, **Judy Hoffman**, Ning Zhang, Eric Tzeng, Trevor Darrell. “DeCAF: A Deep Activation Feature for Generic Visual Recognition”, *In Proc. International Conference in Machine Learning (ICML)*, Beijing, China, 2014.
- [21] **Judy Hoffman**, Erik Rodner, Jeff Donahue, Kate Saenko, Trevor Darrell. “Efficient Learning of Domain-invariant Image Representations”, *In Proc. International Conference on Representation Learning (ICLR)*, Scottsdale, Arizona, 2013. **(Oral Presentation)**
- [22] Jeff Donahue, **Judy Hoffman**, Erik Rodner, Kate Saenko, Trevor Darrell. “Semi-Supervised Domain Adaptation with Instance Constraints”, *In Proc. Computer Vision and Pattern Recognition (CVPR)*, Portland, Oregon, 2013.
- [23] **Judy Hoffman**, Brian Kulis, Trevor Darrell, Kate Saenko. “Discovering Latent Domains for Multisource Domain Adaptation”, *In Proc. European Conference in Computer Vision (ECCV)*, Florence, Italy, 2012.
- [24] Leonard Jaillet, **Judy Hoffman**, Jur van den Berg, Pieter Abbeel, Josep M. Porta, Ken Goldberg. “EG-RRT: Environment-Guided Random Trees for Kinodynamic Motion Planning with Uncertainty and Obstacles.” *In Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Francisco, CA, 2011.

WORKSHOP
PUBLICATIONS

- [25] Evan Shelhamer*, Kate Rakelly*, **Judy Hoffman***, Trevor Darrell. “Clockwork Convnets for Video Semantic Segmentation.” *Workshop on Video Segmentation hosted at ECCV*, 2016.
- [26] Brian Chu, Vashisht Madhavan, Oscar Beijbom, **Judy Hoffman**, Trevor Darrell. “Best Practices for Fine-tuning Visual Classifiers to New Domains.” *TASK-CV Workshop hosted at ECCV*, 2016.
- [27] Oscar Beijbom, **Judy Hoffman**, Evan Yao, Trevor Darrell, Alberto Rodriguez - Ramirez, Manuel Gonzalez - Rivero, Ove Hoegh - Guldberg. “Quantification in-the-wild: data-sets and baselines.” *NIPS Workshop Transfer and Multi-task Learning: Trends and New Perspectives*, 2015.
- [28] **Judy Hoffman**, Eric Tzeng, Jeff Donahue, Yanqing Jia, Kate Saenko, and Trevor Darrell. “One-Shot Adaptation of Supervised Deep Convolutional Models”, *Presented at International Conference in Learning and Representation (ICLR)*, Banff, Canada, 2014.
- [29] Erik Rodner, **Judy Hoffman**, Jeff Donahue, Trevor Darrell, Kate Saenko. “Scalable Transform-based Domain ADaptation”. *VisDA: International Workshop on Visual Domain Adaptation and Dataset Bias (hosted at ICCV)*, Sydney, Australia, 2013.
- [30] Glen Hartmann, Matthias Grundmann, **Judy Hoffman**, David Tsai, Vivek Kwatra, Omid Madani, Sudheendra Vijayanarasimhan, Irfan Essa, James Rehg, Rahul Sukthankar. “Weakly Supervised Learning of Object Segmentations from Web-Scale Video.” *In Proc. European Conference in Computer Vision (ECCV) Workshop on Web-scale Vision and Social Media*, Florence, Italy, 2012. **(Best Paper Award)**
- [31] **Judy Hoffman**, Kate Saenko, Brian Kulis, Trevor Darrell. “Domain Adaptation with Multiple Latent Domains.” *Neural Information Processing Symposium (NIPS) Domain Adaptation Workshop Talk*, Granada Spain, 2011. **(Best Student Paper Award)**

PRE-PRINTS

- [32] **Judy Hoffman**, Dequan Wang, Fisher Yu, Trevor Darrell. “FCNs in the Wild: Pixel-level Adversarial and Constraint-based Adaptation.” <http://arxiv.org/abs/1612.02649>, 2017.

HONORS AND
AWARDS

Rising Stars in EECS	Fall 2015
National Science Foundation Graduate Research Fellowship	2012-2015
Rosetta Stone Ltd Grace Hopper Scholarship	August 2012
Rosalie M. Stern Fellowship	August 2010 - May 2011
Arthur M. Hopkin Award	May 2010
SRC Undergraduate Research Scholarship	August 2009 - May 2010
Intel Undergraduate Research Scholarship	March 2008 - August 2009
Eta Kappa Nu, Member and Officer	December 2007 - Spring 2010
Rose Hills Engineering Scholarship	August 2007 - May 2008
Edward Frank Kraft Award	January 2007

ACADEMIC TALKS

Domain adaptation: From simulation data to real world training data	
Berkeley Deep Drive Symposium	2017
A General Framework for Domain Adversarial Learning	
OpenAI	2017
Qualcomm Research	2017
Berkeley Artificial Intelligence Research (BAIR) Seminar	2017
Invited Talk: WeWork Deep Learning Summit, San Francisco, CA	2017
Adaptive Deep Learning	
Berkeley Artificial Intelligence Research Lab Spring Retreat	2016

Deep Domain Adaptation	Sony Japan and Deep Learning Seminar, Yahoo Japan	2016	
Adapting Deep Networks Across Domains, Modalities, and Tasks	Stanford Vision Seminar	2016	
	Invited Talk at TASK-CV Workshop (ICCV)	2015	
Adapting Deep Models for Visual Recognition in the Wild	MIT EECS Rising stars workshop talk	2015	
Simultaneous Transfer Across Domains and Tasks	Bay Area Robotics Symposium, Berkeley, USA	2015	
Adapting Deep Networks to Real World Problems	Amazon Computer Vision PhD Symposium, Seattle, USA	2015	
Large scale recognition through adaptation	Berkeley-Stanford vision learning meeting, Berkeley, USA	2015	
Continuous Adaptation with Limited Target Labeled Data	IST Austria Symposium on Computer Vision and Machine Learning, Vienna, Austria	2015	
Category Invariant Cross Modality Transfer	Dagstuhl seminar ML with Non-identically Distributed Data, Schloss Dagstuhl, Germany	2015	
Transfer of Deep Vision (and Language) models for “TOT”	DARPA meeting invited talk	2014	
LSDA: Large Scale Detection through Adaptation	Baylearn, Berkeley, USA	2014	
Efficient Learning of Domain Invariant Image Representations	International Conference on Learning Representations, Arizona, USA	2013	
Discovering Latent Domains for Multisource Domain Adaptation	Women in Machine Learning Workshop, Tahoe, USA	2012	
SERVICE & LEADERSHIP	ICCV Workshop and Challenge Organizer: TASK-CV Workshop and Domain Adaptation Challenge	2017	
	NIPS Workshop Organizer: Transfer and Multi-task Learning	2015	
	CVPR Workshop Chair: Women in Computer Vision Workshop	2015	
		<i>Organized the first research-based mentoring workshop at CVPR</i>	
	Graduate Admissions: UC Berkeley	2014-2015	
		<i>Reviewed applications for AI research area</i>	
	Student Leader: Computer science graduate student association, UC Berkeley	2013-2014	
		<i>Outreach and diversity officer for the general computer science graduate student population.</i>	
	Student Leader: Women in computer science and engineering, UC Berkeley	2012-2013	
		<i>Co-president of the graduate women in computer science. Led outreach, mentoring, and current student support efforts.</i>	
	Workshop Organizer at Grace Hopper Conference for Women in Computing	Fall 2012	
		<i>Organized workshop – “What I wish I knew when applying to graduate school”</i>	
	Mentoring: EECS Peers, UC Berkeley	Fall 2013 - Fall 2016	
	<i>Available as a drop-in mentor for graduate students in electrical engineering and computer science.</i>		
Mentoring: Personal mentor for 2-4 undergrad/grad women per year	Fall 2010 - 2016		
Reviewer: ECCV, CVPR, ICCV, NIPS, ICRA, ICML, ICLR, IROS, PAMI, JMLR, PAA			

RESEARCH
EXPERIENCE

University of California Berkeley Berkeley, CA
Postdoctoral Researcher June 2017 - present
Collaborating with Alyosha Efros, Trevor Darrell, and the BAIR lab on lifelong and continuous learning problems with limited human supervision.

Stanford University Palo Alto, CA
Postdoctoral Researcher August 2016 - May 2017
Collaborating with Fei-Fei Li and the AI Research lab on large scale recognition, transfer learning, and deep learning applied at the intersection of vision, robotics, and language.

University of California Berkeley Berkeley, CA
Graduate Student Researcher advised by Trevor Darrell February 2011 - August 2016
Researching domain adaptation, deep learning, and object recognition algorithms.

University of California Berkeley Berkeley, CA
Research Assistant with Ken Goldberg March 2008 - January 2011
Worked in the Automation Science Lab to develop robotic motion planning algorithms and automated medical imaging analysis.

TEACHING
EXPERIENCE

University of California Berkeley Berkeley, CA
Teaching Assistant January 2013 - May 2013
Responsibilities included teaching discussion section 1 hour/week, creating homework and exams, and developing the local and global website.

- CS 188: Introduction to Artificial Intelligence.

University of California Berkeley Berkeley, CA
Teaching Assistant August 2009 - December 2009
Responsibilities included teaching discussion section 1 hour/week, teaching a lab section 3 hours/week, and grading exams.

- EE 20N: Introduction to Signals and Systems.

University of California Berkeley Berkeley, CA
Lab Assistant January 2008 - May 2008
Responsibilities included answering students questions and helping grade lab assignments.

- CS 61A: Structure and Interpretation of Computer Programs

INDUSTRY
EXPERIENCE

Google Inc. Mountain View, CA
Software Engineering Intern, PhD May 15, 2012 - August 10, 2012
Working with the Machine Perception team at Google Research, Mountain View.