

# Subhransu Maji

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## Research areas

My research focuses on computer vision with a particular emphasis on algorithms for high-level recognition. My goal is enable cheap and robust sensing of the visual world using cameras powered by computer vision.

## Education

**Doctor of Philosophy**, with designated emphasis in *“Communication, Computation, and Statistics”*

Thesis: Algorithms and Representations for Visual Recognition

University of California at Berkeley, 2006 – 2011

Thesis advisor: Jitendra Malik

**Bachelor of Technology**

Computer Science and Engineering Department

Indian Institute of Technology, Kanpur, India. 2002 – 2006

*Computer Science and Engineering Department Topper*

## Employment and academic positions

**University of Massachusetts, Amherst**, Assistant Professor

Amherst, MA, USA - 09/2014 - current.

**Toyota Technological Institute at Chicago**, Research Assistant Professor

Chicago, IL, USA - 01/2012 - 08/2014.

**University of Oxford**, Visiting Researcher

Oxford, UK (Hosts: Prof. Andrew Zisserman and Prof. Andrea Vedaldi), Oct - Nov 2013

**Center of Language and Speech Processing**, Senior Member

Johns Hopkins University, USA, June - Aug 2012

**University of California at Berkeley**, Graduate Student Researcher

Berkeley, CA, USA, 2006 – 2011

**Google Inc.**, Summer Intern

Image Search Group, Mountain View, CA, USA, May - July 2008 (Host: Chuck Rosenberg)

**Microsoft Research India**, Visiting Researcher

Bangalore, India, May - June 2010

**LEAR group, INRIA Rhone Alpes**, Summer Intern

Grenoble, France, May - July 2005 (Host: Cordelia Schmid)

## Awards and fellowships

- 2017 Outstanding reviewer, BMVC 2017
- 2016 Outstanding reviewer, ECCV 2016
- 2015 Best poster runner-up, Scene Understanding Workshop (SUNw), CVPR 2015
- 2015 Outstanding reviewer, CVPR 2015
- 2015 Best paper award, WACV 2015
- 2015 Outstanding reviewer, CVPR 2014
- 2013 Best poster runner-up, Fine-Grained Visual Recognition Workshop, CVPR
- 2009-10 Google Graduate Fellowship
- 2010 Honorable mention, PASCAL VOC Segmentation Challenge
- 2009 PAMI-TC student travel for ICCV 2009
- 2009 Best Paper Award, International Conference on Information Fusion (ICIF)
- 2006-07 Department Fellowship, University of California at Berkeley
- 2006 Medal for graduating with the highest GPA in the CS Department, IIT Kanpur
- 2002-06 Pratibha scholarship from Andhra Pradesh Govt., India
- 2005 Rajaraman scholarship for academic proficiency, IIT Kanpur
- 2002-04 Academic excellence award, IIT Kanpur, 2002, 2003, 2004

## Funding

1. Collaborative Research: ABI Innovation: Dark Ecology: Deep Learning and Massive Gaussian Processes to Uncover Biological Signals in Weather Radar, Organization: National Science Foundation. Award number: 1661259, Duration: 5/17 - 4/20, Role: Co-PI, Award amount: \$903,339
2. RI: Small: Texture2Text: Rich Language-Based Understanding of Textures for Recognition and Synthesis, Organization: National Science Foundation. Award number: 1617917, Duration: 9/16 - 8/19, Role: PI, Award amount: \$450,000
3. Faculty award from Facebook AI Research (2016)
4. Received GPUs via NVIDIA Academic Hardware Donation Program, 2015
5. Received GPUs via NVIDIA Academic Hardware Donation Program, 2013

## Professional activities

### Tutorials and workshops co-organizing

*Workshop* on "Fine Grained Visual Classification (FGVC<sup>4</sup>)", CVPR 2017

Co-founder and co-organizer of the "New England Vision Meeting", 2015 (75+ attendees from various universities in the New England area: <http://people.cs.umass.edu/~smaji/nevm2015>)

*Workshop* on "Fine Grained Visual Classification (FGVC<sup>3</sup>)", CVPR 2015

*Workshop* on "Computer Vision and Human Computation", CVPR 2014

*Workshop* on "Fine-grained Recognition Challenge", run in parallel with ILSVRC, ICCV 2013

*Workshop* at the CLSP center, Johns Hopkins university on: *Towards a Detailed Understanding of Objects and Scenes in Natural Images*, June 11 - August 7, 2012.

In collaboration with Andrea Vedaldi, Esa Rahtu, Matthew Blaschko, Iasonas Kokkinos, and Ben Taskar.

<http://www.clsp.jhu.edu/workshops/archive/ws-12/groups/tduosn>

*Tutorial* on "Computational Visual Recognition" at ICVGIP 2012, IIT Bombay

<http://www.cse.iitb.ac.in/graphics/icvgip2012/tutorials.php>

*Tutorial* on “Additive Kernels and Explicit Embeddings for Large-Scale Computer Vision Problems”, ECCV 2012, Florence, Italy

### Reviewing and program committee member

Area chair, IEEE Computer Vision and Pattern Recognition (CVPR), 2018

Panelist, National Science Foundation (IIS), 2017

Area and tutorial chair, International Conference on Computer Vision, Graphics and Image Processing, 2016

Panelist, National Science Foundation (IIS), 2016

Panelist, National Science Foundation (NRI), 2016

Area chair, IEEE Computer Vision and Pattern Recognition (CVPR), 2016

Area chair, International Conference on Computer Vision, Graphics and Image Processing, 2014

Reviewer for the following international conferences:

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2009 – 2017

European Conference on Computer Vision (ECCV) 2010 – 2016

International Conference on Computer Vision (ICCV) 2009 – 2017

Conference on Neural Information Processing Systems (NIPS) 2010 – 2017,

Association for the Advancement of Artificial Intelligence (AAAI) 2012

International Conference on Machine Learning (ICML) 2012, 2013

Reviewer for the following international journals:

IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)

International Journal of Computer Vision (IJCV)

Computer Vision and Image Understanding (CVIU)

IEEE Transactions on Image Processing (IP)

I have also been in the program committee member for various workshops organized at conferences including ECCV, CVPR and ICCV in the past several years.

## Publications

### Journals

1. **Bilinear CNNs for Fine-grained Visual Recognition**  
Tsung-Yu Lin, Aruni RoyChowdhury, Subhransu Maji  
IEEE Transactions of Pattern Analysis and Machine Intelligence (PAMI), first online: July, 2017
2. **Deep Filter Banks for Texture Recognition, Description, and Segmentation**  
Mircea Cimpoi, Subhransu Maji, Iasonas Kokkinos, Andrea Vedaldi  
International Journal of Computer Vision, First online, January 09 2016
3. **Part and Attribute Discovery from Relative Annotations**  
Subhransu Maji and Gregory Shakhnarovich  
International Journal of Computer Vision, May 2014, Volume 108, Issue 1-2, pp 82-96
4. **Efficient Classification for Additive Kernel SVMs**  
Subhransu Maji, Alexander C. Berg and Jitendra Malik  
IEEE Transactions of Pattern Analysis and Machine Intelligence (PAMI), Volume 35 Issue 1, Jan 2013
5. **Poselets: A Distributed Representation for Visual Recognition**  
Lubomir Bourdev, Subhransu Maji and Jitendra Malik  
Journal of Vision, September, 23, 2011 vol. 11 no. 11 article 891

## Refereed conferences

1. **Reasoning about Fine-grained Attribute Phrases using Reference Games**  
Jong-Chyi Su\*, Chenyun Wu\*, Huaizu Jiang, Subhransu Maji  
To appear at International Conference on Computer Vision (ICCV), 2017  
*Publication date: October 22, 2017 (Acceptance rate ??)*
2. **3D Shape Generation using Spatially Ordered Point Clouds**  
Matheus Gadhela, Subhransu Maji, Rui Wang  
British Machine Vision Conference (BMVC), 2017  
*Publication date: September 4, 2017 (Acceptance rate 39%)*
3. **Improved Bilinear Pooling with CNNs**  
Tsung Yu Lin, Subhransu Maji  
British Machine Vision Conference (BMVC), 2017, oral presentation  
*Publication date: September 4, 2017 (Acceptance rate 39%, oral rate 10%)*
4. **Adapting Models to Signal Degradation using Distillation**  
Jong-Chyi Su, Subhransu Maji  
British Machine Vision Conference (BMVC), 2017  
*Publication date: September 4, 2017 (Acceptance rate 39%)*
5. **3D Shape Segmentation with Projective Convolutional Networks**  
Evangelos Kalogerakis, Melinos Averkiou, Subhransu Maji, Siddharth Chaudhuri  
Computer Vision and Pattern Recognition (CVPR), 2017, oral presentation  
*Publication date: July 21, 2017 (Acceptance rate 29%, oral rate 2.65%)*
6. **Texture Attribute Synthesis and Transfer using Feed-forward CNNs**  
Thomas Irmer, Tobias Glasmachers, Subhransu Maji  
IEEE Winter Conference on Applications of Computer Vision (WACV), 2017  
*Publication date: March 27, 2017 (Acceptance rate 45%)*
7. **Visualizing and Understanding Deep Texture Representations**  
Tsung-Yu Lin, Subhransu Maji  
CVPR 2016, Las Vegas, NV, USA  
*Publication date: June 26, 2016 (Acceptance rate 29.9%)*
8. **One-to-many Face Recognition with Bilinear CNNs**  
Aruni RoyChowdhury, Tsung-Yu Lin, Subhransu Maji, Erik Learned-Miller  
WACV 2016, Lake Placid, NY, USA  
*Publication date: March 7, 2016 (Acceptance rate 34%)*
9. **Bilinear CNN Models For Fine-grained Visual Recognition**  
Tsung-Yu Lin, Aruni RoyChowdhury, Subhransu Maji  
ICCV 2015, Santiago, Chile (oral presentation)  
*Publication date: December 13, 2015 (Acceptance rate 30.3%; Oral 3.3%)*
10. **Multi-view CNNs for 3D Shape Recognition**  
Hang Su, Subhransu Maji, Evangelos Kalogerakis, Erik Learned-Miller  
ICCV 2015, Santiago, Chile  
*Publication date: December 13, 2015 (Acceptance rate 30.3%)*
11. **Deep Filter Banks for Texture Recognition and Segmentation**  
Mircea Cimpoi, Subhransu Maji, and Andrea Vedaldi  
CVPR 2015, Boston (oral presentation)  
*Publication date: June 8, 2015 (Acceptance rate 28.4%; Oral 3.3%)*

12. **Learning Localized Perceptual Similarities for Interactive Categorization**  
Catherine Wah, Subhransu Maji, and Serge Belongie  
WACV 2015, Waikoloa Beach, HI (best paper award)  
*Publication date: January 6, 2015 (Acceptance rate 36.7%)*
13. **Knowing a Good HOG Filter when You See it: Efficient Selection of Filters for Detection**  
Ejaz Ahmed, Gregory Shakhnarovich, and Subhransu Maji  
ECCV 2014, Zurich, Switzerland (oral presentation)  
*Publication date: September 6, 2014 (Acceptance rate 26.7%; Oral 2.8%)*
14. **Parsing World's Skylines with Shape Constrained MRFs**  
Rashmi V. Tonge, Subhransu Maji, and C.V. Jawahar  
CVPR 2014, Columbus, Ohio, USA
15. **Similarity Comparisons for Interactive Fine-Grained Categorization**  
Catherine Wah, Grant Van Horn, Steven Branson, Subhransu Maji, Pietro Perona, and Serge Belongie  
CVPR 2014, Columbus, Ohio, USA
16. **Understanding Objects in Detail with Fine-grained Attributes**  
A. Vedaldi, S. Mahendran, S. Tsogkas, S. Maji, B. Girshick, J. Kannala, E. Rahtu, I. Kokkinos, M. B. Blaschko, D. Weiss, B. Taskar, K. Simonyan, N. Saphra, and S. Mohamed  
CVPR 2014, Columbus, Ohio, USA
17. **Describing Textures in the Wild**  
Mircea Cimpoi, Subhransu Maji, Iasonas Kokkinos, Sammy Mohamed, and Andrea Vedaldi  
CVPR 2014, Columbus, Ohio, USA
18. **Active Boundary Annotation using Random MAP Perturbations**  
Subhransu Maji, Tamir Hazan and Tommi Jaakkola  
AISTATS 2014, Reykjavik, Iceland
19. **Learning Efficient Random MAP Predictors with Non-Decomposable Loss Functions**  
Tamir Hazan, Subhransu Maji, Joseph Keshet and Tommi Jaakkola  
NIPS 2013, Lake Tahoe, Nevada, USA
20. **On Sampling from the Gibbs Distribution with Random MAP Perturbations**  
Tamir Hazan, Subhransu Maji and Tommi Jaakkola  
NIPS 2013, Lake Tahoe, Nevada, USA
21. **Part Discovery from Partial Correspondence**  
Subhransu Maji and Gregory Shakhnarovich  
CVPR 2013, Portland, Oregon, USA
22. **Describing People: A Poselet-Based Approach to Attribute Classification**  
Lubomir Bourdev, Subhransu Maji and Jitendra Malik  
ICCV 2011, Barcelona, Spain (oral presentation)
23. **Semantic Contours from Inverse Detectors**  
Bharath Hariharan, Pablo Arbelaez, Lubomir Bourdev, Subhransu Maji and Jitendra Malik  
ICCV 2011, Barcelona, Spain
24. **Action Recognition from a Distributed Representation of Pose and Appearance**  
Subhransu Maji, Lubomir Bourdev and Jitendra Malik  
CVPR 2011, Colorado Springs, Colorado, USA
25. **Biased Normalized Cuts**  
Subhransu Maji, Nisheeth Vishnoi and Jitendra Malik  
CVPR 2011, Colorado Springs, Colorado, USA

26. **Object Segmentation by Alignment of Poselet Activations to Image Contours**  
Thomas Brox, Lubomir Bourdev, Subhransu Maji and Jitendra Malik  
CVPR 2011, Colorado Springs, Colorado, USA
27. **Detecting People Using Mutually Consistent Poselet Activations**  
Lubomir Bourdev, Subhransu Maji, Thomas Brox and Jitendra Malik  
ECCV 2010, Crete, Greece
28. **Max-Margin Additive Classifiers for Detection**,  
Subhransu Maji and Alexander C. Berg  
ICCV 2009, Kyoto, Japan (oral presentation)
29. **Object Detection Using a Max-Margin Hough Transform**  
Subhransu Maji and Jitendra Malik  
CVPR 2009, Miami, Florida, USA (oral presentation)
30. **Multiple-View Object Recognition in Band-Limited Distributed Camera Networks**  
Allen Y. Yang, Subhransu Maji, C. M. Christoudias, Trevor Darrell, Jitendra Malik and S. S. Sastry  
ICDSC 2009, Komo, Italy (oral presentation)
31. **Distributed Compression & Fusion of Nonnegative Sparse Signals for Multiple-View Object Recognition**  
Allen Y. Yang, Subhransu Maji, K. Hong, P. Yan, Shankar S. Sastry  
ICIF 2009, Seattle, Washington, USA (best paper award)
32. **Classification using Intersection Kernel SVMs is Efficient**  
Subhransu Maji, Alexander C. Berg and Jitendra Malik  
CVPR 2009, Anchorage, Alaska, USA
33. **Confidence Based updation of Motion Conspicuity in Dynamic Scenes**  
Vivek Kumar Singh, Subhransu Maji and Amitabha Mukerjee  
Computer and Robot Vision (CRV) 2006, Québec City, Canada

## Workshops

1. **Jointly Learning Multiple Perceptual Similarities**  
Liwen Zhang, Subhransu Maji, and Ryota Tomioka  
Multi-View Representation Learning Workshop (MVRL) at ICML, 2016
2. **Distinguishing Weather Phenomena from Bird Migration Patterns in Radar Imagery**  
Aruni RoyChowdhury, Daniel Sheldon, Subhransu Maji, Erik Learned-Miller  
IEEE Worksop on Perception Beyond the Visual Spectrum (PBVS), 2016
3. **Visualizing Deep Texture Representations**  
Tsung-Yu Lin, Subhransu Maji  
Workshop on Visualization for Deep Learning at ICML, 2016
4. **Learning Localized Perceptual Similarity Metrics for Interactive Categorization**  
Catherine Wah, Subhransu Maji, and Serge Belongie  
Human-Machine Communication for Visual Recognition and Search, ECCV 2014  
*This is the extended abstract version of the WACV 2015 paper*
5. **Using Human Knowledge to Judge Part Goodness: Interactive Part Selection**  
Ejaz Ahmed, Subhransu Maji, Gregory Shakhnarovich, Larry Davis  
Workshop on Computer Vision and Human Computation, CVPR 2014
6. **Discovering a Lexicon of Parts and Attributes**  
Subhransu Maji

Second International Workshop on Parts and Attributes, ECCV 2012 (oral presentation)  
*Best poster runner-up at Fine-Grained Visual Recognition Workshop, CVPR 2013*

7. **Linearized Smooth Additive Classifiers**  
Subhransu Maji, Workshop on Web-scale Vision and Social Media, ECCV 2012 (oral presentation)
8. **Part Annotations via Pairwise Correspondence**  
Subhransu Maji and Gregory Shakhnarovich  
4th Workshop on Human Computation, AAAI 2012 (oral presentation)
9. **Fast Unsupervised Alignment of Video and Text for Indexing/Names and Faces**  
Subhransu Maji and Ruzena Bajscy  
Multimedia Semantics Workshop, ACM Multimedia 2007, Augsburg, Germany

### Technical reports and preprints (non peer-reviewed)

1. **Fine-Grained Visual Classification of Aircraft**  
Subhransu Maji, Esa Rahtu, Juho Kannala, Matthew Blaschko and Andrea Vedaldi  
CoRR arXiv:1306.5151, Submitted 21 Jun 2013.  
*This dataset will be a part of the Fine-Grained Visual Recognition Challenge, run in parallel with ImageNet classification challenge, ILSVRC 2013*
2. **Large Scale Image Annotations on Amazon Mechanical Turk**  
Subhransu Maji, EECS Department, UCB, Tech. Rep. UCB/EECS-2011 – 79, July 2011
3. **Fast and Accurate Digit Classification**  
Subhransu Maji and Jitendra Malik  
EECS Department, UCB, Tech. Rep. UCB/EECS-2009 – 159, Nov. 2009

### Book chapters

1. **A Taxonomy of Part and Attribute Discovery Techniques**  
Subhransu Maji  
Visual Attributes, Springer, 2016, D. Parikh, R. Feris and C. Lampert, Eds.
2. **Perturbation Models and PAC-Bayesian Generalization Bounds**  
J. Keshet, S. Maji, T. Hazan, and T. Jaakkola  
Perturbations, Optimization, and Statistics, MIT Press, 2016, T. Hazan, G. Papandreou, and D. Tarlow, Eds.
3. **Multiple-view Object Recognition in Smart Camera Networks**  
Allen Y. Yang, Subhransu Maji, M. C. Christoudias, Trevor Darrell, Jitendra Malik, Shankar S. Sastry  
Distributed Video Sensor Networks, Springer, 2010

### Open-source software

1. Visualizing deep texture representations  
<https://bitbucket.org/tsungyu/deep-texture>
2. Bilinear CNNs for fine-grained recognition  
<https://bitbucket.org/tsungyu/bcnn>
3. Multi-view CNNs for 3D shape recognition  
<https://github.com/suhangpro/mvcnn>

4. Deep filter-banks for texture recognition  
<https://github.com/mcimpou/deep-fbanks>
5. **FIKSVM**: Fast intersection kernel SVM library  
<http://people.cs.umass.edu/~smaji/projects/fiksvm>
6. Code for parsing skyline images  
<https://github.com/msubhansu/skylineParsing>
7. Software of pose estimation and action recognition from images using poselets  
<http://people.cs.umass.edu/~smaji/projects/{action,3dpose}>
8. A library written in C++/MATLAB to detect pedestrians in images  
<http://people.cs.umass.edu/~smaji/projects/ped-detector>
9. **LIBSPLINE**: A library for training additive classifiers efficiently  
<https://github.com/msubhansu/lib spline>
10. Software for interactive segmentation using normalized cuts  
<http://people.cs.umass.edu/~smaji/projects/biasedNcuts>
11. Software for collecting annotations on Amazon's Mechanical Turk  
<http://people.cs.umass.edu/~smaji/projects/projects/mturk>

## Publicly available datasets and benchmarks

Can be downloaded from: <http://people.cs.umass.edu/~smaji/data.html>

1. **Skyline10** dataset containing 100 high resolution annotated city skyline images, CVPR 2014
2. **OID:Aircraft** images labelled with detailed attributes (8000+ images), CVPR 2014
3. **FGVC:Aircraft** A fine-grained dataset of aircraft variants
4. **Describable texture dataset** (5000+ images with 47 attributes), CVPR 2014
5. **Keypoint annotations** of all the objects (20,000+) in the PASCAL VOC 2012 dataset
6. **Semantic boundary dataset** consisting of object boundaries on 11,000+ images

## Student supervision

### Advisees

JongChyi Su, PhD student, UMass Amherst (*current*)  
 TsungYu Lin, PhD student, UMass Amherst (*current*)  
 Hang Su, PhD student, UMass Amherst (*current*, Co-supervised w/ E. Learned-Miller, E. Kalogerakis)  
 Huaizu Jiang, PhD student, UMass Amherst (*current*, Co-supervised w/ E. Learned-Miller)  
 Aruni RoyChowdhury, PhD student, UMass Amherst (*current*, Co-supervised w/ E. Learned-Miller)  
 Thomas Irmer (MS student at Ruhr-Universität Bochum, co-advised with Tobias Glasmachers)

### Interns and student collaborators

Brayden Neal, undergraduate student (REU program), UPenn, Summer 2016 (*current*)  
 Liwen Zhang, PhD student at University of Chicago (Co-supervised with Ryota Tomioka) (*current*)  
 Mikayla Trimm, undergraduate student (REU program), UCF, Summer 2015



Kundan Kumar, undergraduate student, IIT Kanpur, Summer 2015  
Mircea Cimpoi, PhD student at Oxford University (Co-supervised w/ Andrea Vedaldi), 2013-2015  
Ejaz Ahmed, PhD student at UMD (Intern w/ Greg Shakhnarovich), summer 2014  
Catherine Wah, PhD student at UCSD, Intern, Feb - April '13, Jan - April '14  
Rashmi V. Tonge, MS student at IIIT Hyderabad (Thesis co-supervisor w/ C.V. Jawahar), 2013 - 2014

## Teaching

Instructor, CMPSCI 670: Computer Vision, UMass Amherst, Fall 2016  
Instructor, CMPSCI 370/370HH: Intro. to Computer Vision (w/ honors section), UMass Amherst, Spring 2015  
Instructor, CMPSCI 679: Machine Learning, UMass Amherst, Spring 2015  
Instructor, CMPSCI 670: Computer Vision, UMass Amherst, Fall 2014  
Guest lecturer, Visual Recognition, TTI Chicago, Winter 2012  
Guest lecturer, CS 294: Visual Search Engines, UC Berkeley, Fall 2010  
Guest lecturer, CS 280: Computer Vision, UC Berkeley, Spring 2010  
GSI for CS 162, Operating Systems and Systems Programming, UC Berkeley, Fall 2006  
Organized and taught 'Data Structures and Algorithms', IIT Kanpur, Summer 2006

## Invited talks, presentations, etc.

Cross quality distillation (or "How to see Blurry pictures better"), Google Research, *Cambridge, MA* (June 2016)  
Invited talk, CVPR16 Area Chair Workshop, *Vancouver* (Feb 2016)  
Bilinear CNN models for fine-grained visual recognition  
    Department Colloquium, *Worcester Polytechnic Institute* (Sept 2016)  
    Computer vision seminar, *Boston University* (March 2016)  
    Computer vision seminar, *University of Washington* (Oct 2015)  
    Microsoft Research, *Seattle* (Oct 2015)  
    Computer vision seminar, *UC Berkeley* (Sept 2015)  
    Google research, *Mountain view* (Sept 2015)  
    Computer vision seminar, *MIT* (May 2015)  
Invited talk, ImageNet workshop at ICCV15, *Santiago* (Dec 2015)  
The world of computer vision, Science Quest, *UMass Amherst* (Oct 2015)  
But what is it made of? ("Learning to recognize materials"), Faculty research seminar, UMass Amherst (Dec 2014)  
Rich semantic representations for detailed visual recognition  
    Invited talk, *Toyota Technological Institute at Chicago* (April 2014)  
    Invited talk, *University of Minnesota, Twin-Cities* (March 2014)  
    Invited talk, *Imperial College London* (March 2014)

Invited talk, *Microsoft research, Cambridge, UK* (March 2014)

Invited talk, *Adobe Research, San Francisco* (March 2014)

Invited talk, *University of North Carolina, Chapel Hill* (March 2013)

Invited talk, *University of Southern California* (March 2013)

Invited talk, *University of Maryland, College Park* (March 2013)

Invited talk, *University of California, Berkeley* (March 2013)

Invited talk, *University of Massachusetts, Amherst* (Feb 2014)

#### Discovering the structure of visual categories

Robotics seminar, *Oxford University* (Sept 2013)

Invited talk, *Microsoft research, Cambridge, UK* (Sept 2013)

Machine learning and friends seminar, *UMass, Amherst* (Oct 2013)

Invited talk, *Kyoto university* (May 2013)

Faculty research seminar, *Toyota Technological Institute, Chicago* (2013)

#### Discovering a lexicon of parts and attributes

CLSP Summer Workshop, *Johns Hopkins University* (2012)

Midwest vision workshop, *UIUC* (2012)

Keynote talk, Workshop on Parts and Attributes, *ECCV Florence* (2012)

Computer vision seminar, *Caltech* (2012)

Linearized Smooth Additive Classifiers, Workshop on Web-scale Vision and Social Media, *ECCV, Florence* (2012)

#### Fast and accurate object and action detection

Computer vision seminar, *MIT* (2011)

Robotics institute seminar, *CMU* (2011)

Invited talk, Google research, *Mountain view* (2011)

Vision workshop, *Mysore park* (2011)

#### Large-scale image annotations using Amazon mechanical turk

Intel research, *Berkeley* (2011)

RAD LAB seminar, *Berkeley* (2011)

Machine learning tea, *Berkeley* (2011)