

Kristen Grauman

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA
Ph.D. in Computer Science, July 2006
Thesis title: Matching Sets of Features for Efficient Retrieval and Recognition.
Supervised by Prof. Trevor Darrell.

Massachusetts Institute of Technology, Cambridge, MA
S.M. in Computer Science, June 2003

Boston College, Chestnut Hill, MA
B.A. in Computer Science, *summa cum laude*, May 2001

RESEARCH INTERESTS

Computer vision and machine learning, and their applications to information retrieval and human-computer interaction. Object categorization, image search, unsupervised visual discovery, large-scale retrieval.

APPOINTMENTS

Clare Boothe Luce Assistant Professor University of Texas at Austin, Department of Computer Sciences	2007-present Austin, TX
Postdoctoral Associate MIT Computer Science and Artificial Intelligence Laboratory	Fall 2006 Cambridge, MA
Research Assistant MIT Computer Science and Artificial Intelligence Laboratory	2001-2006 Cambridge, MA
Visiting Research Fellow Lawrence Berkeley National Laboratory, Imaging and Informatics Group	Summer 2003 Berkeley, CA
Research Intern Intel Corporation, Microprocessor Research Labs, Vision and Graphics Group	Summer 2000 Santa Clara, CA
Research Assistant Boston College Computer Vision Group	1999-2001 Chestnut Hill, MA

TEACHING EXPERIENCE

Assistant Professor University of Texas at Austin, Dept. of Computer Sciences CS 395T: Object Recognition, graduate seminar, Spring 2007, 2008. CS 378: Computer Vision, undergrad introductory course, Fall 2007, 2008, 2009. Average instructor rating: 4.6/5.0, 123 students.	Spring 2007-present Austin, TX
Instructor MIT Women's Technology Program Introductory computer science course for high school senior girls.	Summer 2005 Cambridge, MA

Volunteer Tutor Summer 2002
Mother Caroline Academy Dorchester, MA
Tutoring for the adult education program in basic reading, computer use, G.E.D. preparation.

Volunteer Tutor Summer 1998
Suffolk County Jail Boston, MA
Tutoring inmates in basic math, reading, English as a second language, G.E.D. preparation.

SELECTED AWARDS AND HONORS

- National Science Foundation Faculty Early Career Development Award (NSF CAREER), 2008
- Microsoft Research New Faculty Fellow, 2008
Five chosen from about 100 nominees across North American universities
- Best Student Paper Award, with P. Jain and B. Kulis, CVPR 2008
- Frederick A. Howes Scholar Award in Computational Science, Department of Energy, 2007
- Ralph E. Powe Junior Faculty Enhancement Award in Math/Computer Sciences, 2007
- Virtual Earth Academic Research Collaboration Award, Microsoft Research, 2007
- Computational Science Graduate Fellowship, Department of Energy, 2001-2005
Full funding for four years of graduate study
- Morris Joseph Levin Award, MIT Electrical Engineering and Computer Science Dept., 2003
Best masters thesis presentation, "A Statistical Image-Based Shape Model for Visual Hull Reconstruction and 3D Structure Inference"
- Emerson Music Scholarship (piano), MIT Music Department, 2001-2005
- Boston College Presidential Scholar, 1997-2001
Academic scholarship, awarded to 12 of about 2,200 students
- Alfred McGuinn Award, Boston College, 2001
Awarded to two graduates for outstanding achievement in both the sciences and humanities
- Accenture Award, Boston College Computer Science Departmental Award, 2001
Awarded to one graduate for outstanding achievement in the field of computer science

PUBLICATIONS

Refereed conference papers

B. Kulis and K. Grauman. Kernelized Locality-Sensitive Hashing for Scalable Image Search. To appear, *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, Kyoto, Japan, October, 2009.

S. Vijayanarasimhan and K. Grauman. What's It Going to Cost You?: Predicting Effort vs. Informativeness for Multi-Label Image Annotations. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, FL, June 2009.

Y. J. Lee and K. Grauman. Shape Discovery from Unlabeled Image Collections. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, FL, June 2009.

J. Kim and K. Grauman. Observe Locally, Infer Globally: a Space-Time MRF for Detecting Abnormal Activities with Incremental Updates. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, FL, June 2009.

- S. Vijayanarasimhan and K. Grauman. Multi-Level Active Prediction of Useful Image Annotations for Recognition. In *Advances in Neural Information Processing Systems 21* (NIPS), Vancouver, Canada, December 2008. (oral presentation, **3%** acceptance rate)
- P. Jain, B. Kulis, I. Dhillon, and K. Grauman. Online Metric Learning and Fast Similarity Search. In *Advances in Neural Information Processing Systems 21* (NIPS), Vancouver, Canada, December 2008. (oral presentation, **3%** acceptance rate)
- P. Jain, B. Kulis, and K. Grauman. Fast Image Search for Learned Metrics. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), Anchorage, AK, June 2008. (oral presentation, **4%** acceptance rate) [**Best Student Paper Award**]
- S. Vijayanarasimhan and K. Grauman. Keywords to Visual Categories: Multiple-Instance Learning for Weakly Supervised Object Categorization. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), Anchorage, AK, June 2008.
- Y. J. Lee and K. Grauman. Foreground Focus: Finding Meaningful Features in Unlabeled Images. In *Proceedings of the British Machine Vision Conference* (BMVC), Leeds, U.K., September 2008. (oral presentation, 12.5% acceptance rate)
- S. Gupta, J. Kim, K. Grauman, and R. Mooney. Watch, Listen & Learn: Co-training on Captioned Images and Videos. In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases* (ECML PKDD), Antwerp, Belgium, September 2008.
- A. Kapoor, K. Grauman, R. Urtasun, and T. Darrell. Active Learning with Gaussian Processes for Object Categorization. In *Proceedings of the IEEE International Conference on Computer Vision* (ICCV), Rio de Janeiro, Brazil, October 2007.
- K. Grauman and T. Darrell. Pyramid Match Hashing: Sub-Linear Time Indexing Over Partial Correspondences. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), Minneapolis, MN, June 2007.
- K. Grauman. The Pyramid Match: Efficient Learning with Partial Correspondences. In *Proceedings of the Association for the Advancement of Artificial Intelligence* (AAAI), Vancouver, Canada, July 2007.
- K. Grauman and T. Darrell. Approximate Correspondences in High Dimensions. In *Advances in Neural Information Processing Systems 19* (NIPS), Vancouver, Canada, December 2006. (spotlight presentation)
- K. Grauman and T. Darrell. Unsupervised Learning of Categories from Sets of Partially Matching Image Features. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), New York City, NY, June 2006. (oral presentation, **4.8%** acceptance rate)
- K. Grauman and T. Darrell. The Pyramid Match Kernel: Discriminative Classification with Sets of Image Features. In *Proceedings of the IEEE International Conference on Computer Vision* (ICCV), Beijing, China, October 2005. (oral presentation, **3.8%** acceptance rate)
- D. Demirdjian, L. Taycher, G. Shakhnarovich, K. Grauman, and T. Darrell. Avoiding the “Streetlight Effect”: Tracking by Exploring Likelihood Modes. In *Proceedings of the IEEE International Conference on Computer Vision* (ICCV), Beijing, China, October 2005.

K. Grauman and T. Darrell. Efficient Image Matching with Distributions of Local Invariant Features. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, San Diego, CA, June 2005.

T. Yeh, K. Grauman, K. Tollmar, and T. Darrell. A Picture is Worth a Thousand Keywords: Image-Based Object Search on a Mobile Platform. In *Proceedings of the Conference on Human Factors in Computing Systems (CHI)*, Portland, OR, April 2005.

K. Grauman and T. Darrell. Fast Contour Matching Using Approximate Earth Mover's Distance. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Washington DC, June 2004.

K. Grauman, G. Shakhnarovich, and T. Darrell. Virtual Visual Hulls: Example-Based 3D Shape Inference from a Single Silhouette. In *Proceedings of the Second Workshop on Statistical Methods in Video Processing*, in conjunction with *European Conference on Computer Vision (ECCV)*, Prague, Czech Republic, May 2004.

K. Grauman, G. Shakhnarovich, and T. Darrell. Inferring 3D Structure with a Statistical Image-Based Shape Model. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, Nice, France, October 2003.

K. Grauman, G. Shakhnarovich, and T. Darrell. A Bayesian Approach to Image-Based Visual Hull Reconstruction. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Madison, WI, June 2003.

K. Grauman, M. Betke, J. Gips, and G. Bradski. Communication via Eye Blinks: Detection and Duration Analysis in Real Time. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Lihue, HI, December 2001.

Journal articles and book chapter

B. Kulis, P. Jain, and K. Grauman. Fast Similarity Search for Learned Metrics. Invited submission, to appear, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2009.

Y. J. Lee and K. Grauman. Foreground Focus: Unsupervised Learning from Partially Matching Images. *International Journal of Computer Vision (IJCV)*, Vol. 85, No. 2, 2009.

K. Grauman. Efficiently Searching for Similar Images. Invited article, to appear, *Communications of the ACM*, 2009.

A. Kapoor, K. Grauman, R. Urtasun, and T. Darrell. Gaussian Processes for Object Categorization. *International Journal of Computer Vision (IJCV)*, 2009.

K. Grauman and T. Darrell. The Pyramid Match Kernel: Efficient Learning with Sets of Features. *Journal of Machine Learning Research (JMLR)*, 8 (Apr): 725–760, 2007.

K. Grauman, M. Betke, J. Lombardi, J. Gips, and G. Bradski. Communication via Eye Blinks and Eyebrow Raises: Video-Based Human-Computer Interfaces. *Universal Access in the Information Society*, 2(4) pp. 359-373, Springer-Verlag Heidelberg, November 2003.

K. Grauman and T. Darrell. Contour Matching Using Approximate Earth Mover's Distance, chapter in *Nearest Neighbors in Learning and Vision: Theory and Practice*, T. Darrell, P. Indyk, G. Shakhnarovich, Editors. MIT Press, 2005.

INVITED TALKS

- **Visual and Contextual Learning from Annotated Images and Videos**
Computer Vision and Pattern Recognition (CVPR) Workshop, June 2009
- **Institute for Pure and Applied Mathematics (IPAM)**
Workshop on Numerical Tools and Fast Algorithms for Massive Data Mining, Search Engines, and Applications, October 2007
- MIT CSAIL Special Seminar, March 2009
- **University of California at Berkeley** Computer Vision Seminar, February 2009
- **Columbia University** Digital Video and Multimedia Lab Seminar, January 2009
- **University of Maryland** Computer Vision Lab Seminar, August 2008
- **Department of Energy Computational Science Fellows' Conference** June 2007
- **Microsoft Research** Interactive Visual Media Group Seminar, April 2006
- **Princeton University** Computer Science Colloquium, March 2006
- **Duke University** Computer Science Colloquium, March 2006
- **University of Rochester** Computer Science Colloquium, April 2006
- **University of California-San Diego** Elec. and Computer Engineering Seminar, April 2006
- **University of Texas at Austin** Computer Sciences Colloquium, April 2006
- **Toyota Technological Institute at Chicago** March 2006
- **Discovery of Object Categories**
Neural Information Processing Systems (NIPS) Workshop, December 2005
- **Kernel Methods and Structured Domains**
Neural Information Processing Systems (NIPS) Workshop, December 2005
- **Computational Research in Boston (CRiB)**
Harvard, MIT, and Lincoln Labs joint seminar, October 2005
- **Boston University** Image and Video Computing Group, April 2005
- MIT Representation and Modeling for Image Analysis, guest lecture, April 2005
- **Brown University** Vision Seminar, April 2004
- **University of California at Berkeley** Vision Group Seminar, July 2003

INVITED WORKSHOPS AND SYMPOSIA

- **The Learning Workshop** Clearwater, Florida. April 2009
Talk: Cost-Sensitive Active Visual Category Learning
- **International Workshop on Object Recognition** Lake Como, Italy. May 2008
Talk: Multi-Level Active Prediction of Useful Image Annotations for Recognition
- **The Learning Workshop** Snowbird, Utah. April 2008

SERVICE AND PROFESSIONAL ACTIVITIES

- Area Chair, IEEE International Conference on Computer Vision (ICCV) 2009
- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2009
- Doctoral Consortium Chair, CVPR 2009
- Co-taught tutorial on Visual Recognition for the Association for the Advancement of Artificial Intelligence (AAAI) 2008
- Book reviewer, MIT Press

- Panelist, National Science Foundation, NSF Div. of Information & Intelligent Sys.: 2006, 2009
- First Bytes and Breakfast Bytes Programs, UT-Austin: lectures to high school teachers and young students to promote CS education
- Program committee, European Conference on Computer Vision 2008
- Program committee, IEEE Conference on Computer Vision and Pattern Recognition 2007
- Program committee, IEEE International Conference on Computer Vision 2007
- Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal of Computer Vision, and Neural Information Processing Systems.

PERSONAL

Citizenship : United States