

Rob Fergus

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CURRENT POSITION

Assistant Professor of Computer Science The Courant Institute of Mathematical Sciences New York University	2007-present
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PREVIOUS POSITIONS

Postdoctoral Research Associate CSAIL, Massachusetts Institute of Technology Advisor: Professor William T. Freeman	2005-2007
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EDUCATION

University of Oxford, UK D.Phil. in Electrical Engineering, October 2005 Thesis title: Visual Object Category Recognition Advisor: Professor Andrew Zisserman	2002-2005
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California Institute of Technology, Pasadena, CA M.Sc. in Electrical Engineering, June 2002 Advisor: Professor Pietro Perona	2000-2002
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University of Cambridge, UK Pembroke College B.A., M.Eng. in Electrical and Information Engineering	1996-2000
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RESEARCH INTERESTS

Computer Vision, Computer Graphics, Object Recognition, Computational Photography, applications of Machine Learning within Graphics and Vision.

HONORS & AWARDS

Best Computer Science PhD thesis in UK, British Computer Society	2006
Best Computer Vision PhD thesis in UK, British Machine Vision Association	2006
Best Short Course Prize , IEEE International Conference on Computer Vision	2005
Best Paper Prize , IEEE Conf. on Computer Vision and Pattern Recognition	2003

Graduate Fellowship funding award (from UK equivalent of NSF)	2002-2005
Engineering & Applied Science Fellowship, Caltech	2000
Foundress' Prize - Pembroke College (top 5% of year)	1998
College & Foundation Scholarship - Pembroke College "	1997/8
Top Physics project in national exam (senior year of UK high-school)	1995

RESEARCH EXPERIENCE

Postdoctoral Research Associate, CSAIL, Massachusetts Institute of Technology Research topics: computational photography, object recognition	2005-2007
Research Assistant, Robotics research group, University of Oxford Research topics: object recognition and learning in weakly supervised settings	2002-2005
Research Assistant, Dept. Electrical Engineering, California Institute of Technology Research topics: object recognition	2000-2002
Undergraduate Research Fellowship Dept. Electrical Engineering, California Institute of Technology Design of car recognition system.	Summer 1999
Undergraduate Industrial Sponsorship Control Techniques Plc., Newtown, Wales. Mentor: Dr. David Jones. Design and construction of computer controlled test rig for DC servo motors.	1996, Summers 1997, 1998

PUBLICATIONS

Refereed conference papers

- [R10] Weiss, Y., Torralba, A. and Fergus, R. , "Spectral Hashing", *Proc. Information Processing Systems 2008*.
- [R9] Torralba, A. , Fergus, R. and Weiss, Y. , "Small Codes and Large Image Databases for Recognition", *Proc. of the IEEE Conf on Computer Vision and Pattern Recognition 2008*.
- [R8] Russell, B. , Torralba, A. , Liu, C. , Fergus, R. and Freeman, W.T. , ""Object Recognition by Scene Alignment" *Proc. Neural Information Processing Systems 2007*.
- [R7] Fergus, R., Fei-Fei L., Perona, P. and Zisserman, A., "Learning Object Categories from Google's Image Search", *Proc. of the International. Conference on Computer Vision (ICCV)*, Vol. 2, pp. 1816-1823, 2005.
- [R6] Fergus, R., Perona, P. and Zisserman, A., "A Sparse Object Category Model for Efficient Learning and Exhaustive Recognition", *Proc. of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Vol. 1, pp. 380-387, 2005.
- [R5] Fergus, R., Zisserman, A. and Perona, P., "Sampling Methods for Unsupervised Learning", *Advances in Neural Information Processing Systems (NIPS)*, pp. 433-440, 2004.

[R4] Fei-Fei, L., Fergus, R. and Perona, P., "Learning Generative Visual Models from Few Training Examples: An Incremental Bayesian Approach Tested on 101 Object Categories", *IEEE CVPR Workshop of Generative Model Based Vision*, 2004.

[R3] Fergus, R., Perona, P. and Zisserman, A., "A Visual Category Filter for Google Images", *Proc. of the 8th European Conference on Computer Vision (ECCV)*, pp. 242-256, 2004.

[R2] Fei-Fei, L., Fergus, R. and Perona, P., "A Bayesian Approach to Unsupervised One-Shot Learning of Object Categories", *Proc. of the IEEE International Conference on Computer Vision (ICCV)*, pp. 1134-1141, 2003.

[R1] Fergus, R., Perona, P. and Zisserman, A., "Object Class Recognition by Unsupervised Scale-Invariant Learning", *Proc. of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Vol. 2, pp. 264-271, 2003. **Awarded best paper prize out of ~1000 submissions.** [742 citations].

Journal papers

[J6] Torralba, A., Fergus, R. and Freeman, W. T., "80 Million Tiny Images: A Large Dataset for Nonparametric Object and Scene Recognition", *IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI)*, Vol. 30(11), pp. 1958 - 1970, 2008.

[J5] Levin, A., Fergus, R., Durand, F. and Freeman, W.T., "Image and Depth from a Conventional Camera with a Coded Aperture", Vol. 26, Issue 3, pp. 70-79, *ACM Trans. on Graphics (Proc. SIGGRAPH) 2007*.

[J4] Fergus, R., Singh, B., Hertzmann A., Roweis, S. T. and Freeman, W.T., "Removing Camera Shake From a Single Photograph", Vol. 25, Issue 3, pp. 787-794, *ACM Trans. on Graphics (Proc. SIGGRAPH) 2006*.

[J3] Fergus, R., Perona, P. and Zisserman, A., "Weakly Supervised Scale-Invariant Learning of Models for Visual Recognition", Vol. 71, Issue 3, pp. 273-303, *International Journal of Computer Vision (IJCV)*, 2007.

[J2] Fei-Fei, L., Fergus, R. and Perona, P., "Learning Generative Visual Models for 101 Object Categories", *Computer Vision and Image Understanding*, 2006.

[J1] Fei-Fei, L., Fergus, R. and Perona, P., "One-Shot Learning of Object Categories", *IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI)*, Vol. 28(4), pp. 594 - 611, 2006.

Book chapters

[B2] Fergus, R., Perona, P. and Zisserman, A., "Object Class Recognition by Unsupervised Scale-Invariant Learning", in *Cognitive Vision Systems*, Editor: Nagel, H.H., Springer LNCS 3948, 2006.

[B1] Fergus, R., Perona, P. and Zisserman, A., "A Sparse Object Category Model for Efficient Learning and Complete Recognition", in *Toward Category-Level Object Recognition*, Editors: J. Ponce, M. Hebert, C. Schmid, and A. Zisserman, Springer LNCS 4170, 2006.

PATENTS

Fergus, R., Singh, B., Hertzmann, A., Roweis, S.T. and Freeman, W.T., "Removing Camera Shake from a Single Photograph". Patent application filed 07/28/06.

TEACHING

Computer Vision (G22.2271-001)	Fall 2008
Computational Photography (G22.3033-006)	Spring 2008
Recognizing and Learning Object Categories Conference tutorial with L.Fei-Fei and A. Torralba	ICCV 2005, CVPR 2007, ICML 2008

FUNDING AWARDS

Gift of \$25,000 from Microsoft Research	Apr 2008
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PROFESSIONAL MEMBERSHIPS

Associate member of NCAP program of Canadian Institute for Advanced Research
Member of IEEE

INVITED WORKSHOPS

NCAP Summer School, Toronto, CA	Aug 2008
Lake Como Workshop on Object Recognition	May 2008
CIFAR NCAP meeting	May 2008
Snowbird Learning Workshop (Snowbird, UT) "Small Codes and Large Image Databases for Object Recognition"	Apr 2008
IPAM meeting (UCLA) "80 Million Tiny Images"	Nov 2007
International Object Recognition Workshop (Sicily) "Object Recognition in Tiny Images"	Sept 2006
"Separating Learning and Recognition in the Constellation Model"	Oct 2004
"Object Class Recognition Using Unsupervised Scale-Invariant Learning"	Aug 2003
Intl. Workshop on Current Trends in Computer Vision, Lhasa, Tibet "Learning Object Categories from Google"	Aug 2006
Neural Information Processing Systems (NIPS) Workshop "Transferring Information Using Bayesian Priors on Object Categories"	Dec 2005

INVITED TALKS

<i>Small Codes and Large Image Databases for Object Recognition</i>	June 2008
IBM Research, Hawthorn, NY	May 2008
Google, CA	March 2008
Google, NY	
<i>Removing Camera Shake from a Single Image</i>	Oct 2006
California Institute of Technology	July 2006
Oxford University	June 2006
Carnegie Mellon University	
<i>Learning Object Categories from Google</i>	March 2006
Boston University	Oct 2005
Massachusetts Institute of Technology, class 6.897	June 2005
Microsoft Research Cambridge	May 2004
University of California, Los Angeles	
<i>Object Class Recognition</i>	June 2004
University of California, Berkeley, class CS284	May 2004
California Institute of Technology	

PROFESSIONAL ACTIVITIES

Conference reviewing: CVPR, NIPS, ECCV, ICCV, BMVC, SIGGRAPH, ICCP
Journal reviewing: IJCV, PAMI, CVIU, TIP, JOV
Grant reviewing: Israel Science Foundation, U.S. Army research board

PERSONAL

UK citizen currently holding H1-B visa
Interests: competitive long-distance running: Captain of Cambridge University team (1999-2000), county 3000m steeplechase champion (1998,1999,2000), sub-3hr Marathon (1997); mountain climbing (South America & Alps)