
Dr Andrea Vedaldi

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Research Interests

Visual object detection, image classification, large scale machine learning and kernel methods.

Professional Experience

University of Oxford, Junior Research Fellow
Oxford, UK, since 8/08
Affiliated with the Visual Geometry Group of Andrew Zisserman

Education

University of California at Los Angeles, Doctor of Philosophy
Dept. of Computer Science
Los Angeles, California, 5/05–6/08
Thesis: “Invariant representations and learning for computer vision”
Committee: Alan Yuille, Song-Chun Zhu, Luiminita Vese, Serge Belongie, Stefano Soatto (chair)

University of California at Los Angeles, Master of Science
Dept. of Computer Science
Los Angeles, California, 7/03–5/05
G.P.A. 4/4
Advisor: Stefano Soatto

University of Padua, Laurea in Ingegneria Informatica (MSc equivalent)
Dept. of Information Engineering,
Padua, Italy, 9/98–4/03
Thesis: “Modelli setocastici per il riconoscimento di sistemi di gesti complessi”
Highest honors
Advisor: Ruggero Frezza

Funding

Xerox Foundation UAC Grant, 90,000 USD, 2011-13.

PASCAL Harvest Grant for VLFeat, 21,420 GBP, 2011.

Awards and Fellowships

Best Reviewer Award, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011.

W. W. Spooner Junior Research Fellow, New College, Oxford, 2011.

Oxford Violette and Samuel Glasstone Research Fellowships in Science, 2010.

Winner of the “ACM Multimedia Open Source Software Competition” for VLFeat, with Brian Fulkerson, at the ACM international conference on Multimedia, 2010.

Winner of the “PASCAL Visual Object Classification Challenge” for object detection, with V. Gulshan, M. Varma, and A. Zisserman, at the International Conference on Computer Vision (ICCV), 2009.

“Outstanding Doctor of Philosophy in Computer Science,” *The Henry Samueli School of Engineering and Applied Science, University of California – Los Angeles*, 2008.

“Outstanding Master of Science in Computer Science,” *The Henry Samueli School of Engineering and Applied Science, University of California – Los Angeles*, 2005.

Professional Activities

Team leader. Johns Hopkins CLSP Summer Research Workshop “Towards a Detailed Understanding of Objects and Scenes in Natural Images”, June 11 – August 7 2012, in collaboration with Subhransu Maji, Matthew Blaschko, and Iasonas Kokkinos.

Tutorials. “VLFeat: An Open and Portable Library of Computer Vision Algorithms” at the European Conference on Computer Vision (ECCV), 2010.

“VLFeat: An Open and Portable Library of Computer Vision Algorithms”, with Brian Fulkerson, at the IEEE international conference on Computer Vision and Pattern Recognition (CVPR), 2010.

Area Chair. International Conference on Computer Vision (ICCV), 2011, British Machine Vision Conference (BMVC), 2012.

Reviewer: international conferences. IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2005–2012, European Conference on Computer Vision (ECCV) 2006,2008,2010, International Conference on Computer Vision (ICCV) 2005,2007,2009, International Conference on Neural Information Processing Systems (NIPS) 2007–11, Robotics Science and Systems 2012.

Reviewer: international journals. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal on Computer Vision (IJCV), IEEE Transactions on Image Processing (TIP), Computer Vision and Image Understanding (CVIU), Neurocomputing.

Reviewer: national conferences. Indian Conference on Computer Vision, Graphics & Image Processing (ICCVGP).

Reviewer: funding schemes. Vienna Science and Technology Fund (WWTF) 2011, CHIST-ERA 2012.

Advising

PhD

Omkar Parkhi

University of Oxford (2011–present)
Co-supervised with Andrew Zisserman

Mircea Cimpoi

University of Oxford (2011–present)

Co-supervised with Andrew Zisserman

Marco Pedersoli

University of Barcelona (2011)

Co-supervised with Jordi Gonàlez

MSc and MEng

Mayank Juneja

MSc student, International Institute of Information Technology - Hyderabad (2009–present)

Co-supervised with C. V. Jawahar and Andrew Zisserman

Max Jaderberg

MEng, 4yp, University of Oxford (2011–present)

Co-supervised with Andrew Zisserman

John Cant

MEng, 4py, University of Oxford (2010–2011)

Co-supervised with Andrew Zisserman

Omkar Parkhi

MSc student, International Institute of Information Technology - Hyderabad (2008–2011)

Co-supervised with C. V. Jawahar and Andrew Zisserman

Vempati Sreekanth

MSc, International Institute of Information Technology - Hyderabad (2010)

Co-supervised with C. V. Jawahar and Andrew Zisserman

Other

Michal Spisiak

BMath, 3yp, University of Oxford (2011–12)

Teaching

College teaching. Collections: New College, Trinity 2012. Tutorials: New College, 1P2, Op. Amp. Circuits, 2012.

Lectures. 4th year C4B Computer Vision course (two lectures), Oxford, 2010. Various lectures on Computer Vision and Computer Graphics, UCLA, 2005–08.

Example classes and labs. 4th year C19 Machine Learning example classes, Oxford, 2012 Computer Vision example classes, Oxford, 2009–10. 3rd year Information Engineering Labs (III year B4) on Computer Vision, Oxford, 2009–12. Teaching Assistant, Computer Graphics, UCLA, 2005.

Software Projects

Main author of the VLFeat library of computer vision algorithms (<http://www.vlfeat.org/>). The library is a popular tool for fast prototyping in computer vision research.

Presentations

“Semantic image analysis with structure and kernels”, Max Planck Institute, *Saarbrücken*, Germany, 2011.

“Efficient Structured Modeling for the Interpretation of Images”, CIS Seminar, *Johns Hopkins University*, Baltimore, US, 2011.

“Multiple and fast kernels for the detection of visual object categories”, **invited talk** at the *Workshop on Kernels and Distances for Computer Vision*, in conjunction with the *International Conference on Computer Vision (ICCV)*, Barcelona, 2011.

“Efficient Structured Modeling for the Interpretation of Images”, LCSR/ERC Seminar, *Johns Hopkins University*, Baltimore, US, 2011.

“Efficient Additive Kernels via Explicit Feature Maps”, CIS Seminar, *Johns Hopkins University*, Baltimore, US, 2010.

“Efficient Additive Kernels via Explicit Feature Maps”, seminar, *University of Edinburgh*, UK, 2010.

“Efficient Additive Kernels via Explicit Feature Maps”, seminar, *Heriot-Watt University*, Edinburgh, UK, 2010.

“A Tale of Two Object Detectors”, CS seminar, *University of California at San Diego (UCSD)*, San Diego, US, 2010.

“Multiple kernels for Object Classification and Detection”, **invited talk** at the *PASCAL VOC Challenge Workshop*, in conjunction with the *International Conference on Computer Vision (ICCV)*, Kyoto, Japan, 2009.

“Multiple kernels for Object Classification and Detection”, **invited talk** at the Indian Institute of Information Technology (IIIT), Hyderabad, 2009.

“The design and implementation of the SIFT feature detector and descriptor”, **invited talk** at the Indian Institute of Information Technology (IIIT), Hyderabad, 2009.

“Invariant Representation and Learning for Computer Vision”, seminar, University of Oxford, UK, 2008.

“Invariant Representation and Learning for Computer Vision”, seminar, *École Centrale*, Paris, 2008.

“Viewpoint Invariant Features: Why it works, what to do when it does not”, seminar, *Univeristy of Padova*, Italy, 2007.

“Viewpoint Invariant Features: Why it works, what to do when it does not”, seminar, *Univeristy of San Diego (UCSD)*, US, 2007.

“Viewpoint Invariant Features: Why it works, what to do when it does not”, seminar, *Univeristy of California at Berkeley*, US, 2007.

Publications

Remark. *The major computer vision publication avenues are ICCV, ECCV, CVPR, and NIPS (acceptance rates: oral < 10%, poster < 30%). CiteSeer ranks ICCV and ECCV respectively in the top 5% and 7% of all computer science journals and conferences.*

- O. Parkhi, A. Vedaldi, and A. Zisserman, “On-the-fly specific person retrieval”, in *Proceedings of the Int. Workshop on Image Analysis for Multimedia Interactive Services*, 2012.
- A. Vedaldi and A. Zisserman “Sparse Kernel Approximations for Efficient Classification and Detection”, in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2012.
- O. Parkhi, A. Vedaldi, C. V. Jawahar, and A. Zisserman, “Cats vs Dogs”, in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2012.
- M. Pedersoli, A. Vedaldi, and J. González, “A Coarse-to-fine approach for fast deformable object

- detection”, in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* (oral presentation), 2011.
- V. Lempitsky, A. Vedaldi, and A. Zisserman, “A Pylon Model for Semantic Segmentation” in *Advances in Neural Information Processing Systems (NIPS) 24*, 2011.
- K. Chatfield, V. Lempitsky, A. Vedaldi, and A. Zisserman, “The devil is in the details: an evaluation of recent feature encoding methods”, in *Proceedings of the British Machine Vision Conference (BMVC)*, 2011.
- O. Parkhi, A. Vedaldi, C. V. Jawahar, and A. Zisserman, “The Truth About Cats and Dogs”, in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2011.
- A. Vedaldi, M. Blaschko, and A. Zisserman, “Learning Co-variant Structured Output SVM Regressors”, in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2011.
- A. Vedaldi and A. Zisserman, “Efficient Additive Kernels via Explicit Feature Maps”, in *IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI)*, 34(3), 2012 (preprint 2011)
- M. Pedersoli, A. Vedaldi, and J. González, “A Coarse-to-fine approach for fast deformable object detection”, in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)* (oral presentation), 2011.
- M. B. Blaschko, A. Vedaldi, and A. Zisserman, “Simultaneous Object Detection and Ranking with Weak Supervision”, in *Advances in Neural Information Processing Systems (NIPS) 23*, 2010.
- V. Sreekanth, A. Vedaldi, C. V. Jawahar, and A. Zisserman, “Generalized RBF feature maps for efficient detection,”, in *Proceedings of the British Machine Vision Conference (BMVC)* (oral presentation), 2010.
- A. Vedaldi, H. Ling, and S. Soatto, “Knowing a Good Feature When You See It: Ground Truth and Methodology to Evaluate Local Features for Recognition”, in R. Cipolla, S. Battiato, and G. M. Farinella, editors, *Computer Vision: Detection, Recognition and Reconstruction*, 285, 27–49, Springer, 2010.
- A. Vedaldi and A. Zisserman, “Efficient Additive Kernels via Explicit Feature Maps”, in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2010.
- A. Vedaldi and A. Zisserman “Structured regression for detection with partial truncation”, in *Advances in Neural Information Processing Systems (NIPS) 22*, pp. 1928–1936, 2009.
- A. Vedaldi, V. Gulshan, M. Varma and A. Zisserman “Multiple Kernels for Object Detection”, in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2009.
- B. Fulkerson, A. Vedaldi and S. Soatto “Class Segmentation and Object Localization with Superpixel Neighborhoods”, in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2009.
- B. Fulkerson, A. Vedaldi and S. Soatto “Localizing Objects with Smart Dictionaries”, in *European Conference on Computer Vision (ECCV)*, vol. 1, pp. 179–192, 2008.
- A. Vedaldi and S. Soatto “Quick Shift and Kernel Methods for Mode Seeking”, in *European Conference on Computer Vision (ECCV)*, vol. 4, pp. 705–718, 2008.
- A. Vedaldi “Invariant Representation and Learning for Computer Vision,” *Ph.D. Thesis, University of California at Los Angeles (UCLA)*, 2008.
- A. Vedaldi and S. Soatto, “Relaxed Matching Kernels for Object Recognition,” in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2008.
- A. Vedaldi and S. Soatto, “Joint Alignment up to (Lossy) Transformations,” in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2008.
- A. Vedaldi, P. Favaro, and E. Grisan, “Boosting Invariance and Efficiency in Supervised Learning,” in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2007 (oral presentation).

- A. Rabinovich, A. Vedaldi, C. Galleguillos, E. Wiewiora, and S. Belongie, “Objects in Context,” in *Proceedings of the International Conference on Computer Vision (ICCV)*, 2007 (oral presentation).
- E. Jones, A. Vedaldi and S. Soatto, “Inertial structure from motion with autocalibration”, in *Proceedings of the ICCV Workshop on Dynamical Vision*, 2007.
- A. Vedaldi, G. Guidi, and S. Soatto, “Moving Forward in Structure From Motion,” in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2007.
- A. Vedaldi and S. Soatto, “A Complexity-Distortion Approach to Joint Pattern Alignment,” in *Advances in Neural Information Processing Systems (NIPS) 19*, pp. 1425–1432, 2007.
- A. Vedaldi and S. Soatto, “Local Features, All Grown Up,” in *Proceedings of the IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, vol .2, pp. 1753-1760, 2006 (oral presentation).
- A. Vedaldi and S. Soatto, “Viewpoint Induced Deformation Statistics and the Design of Viewpoint Invariant Features: Singularities and Occlusions,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, vol. 2, pp. 374, 2006.
- A. Vedaldi and S. Soatto, “Features for recognition: Viewpoint invariance for non-planar scenes,” in *Proceedings of the International Conference on Computer Vision (ICCV)*, vol. 2, pp. 1474–1481, 2005 (oral presentation).
- A. Vedaldi, H. Jin, P. Favaro, and S. Soatto, “KALMANSAC: Robust filtering by consensus,” in *Proceedings of the International Conference on Computer Vision (ICCV)*, vol. 1, pp. 633–640, 2005.