

MARCO PEDERSOLI

Assistant Professor at ETS Montreal

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RESEARCH INTERESTS

Visual Recognition, Efficient Deep Learning, Learning with Reduced Supervision, Data Exploration

ACADEMIC BACKGROUND

Autonomous University of Barcelona

Ph.D. in Computer Science

June 2012

Hierarchical Multiresolution Models for fast Object Detection

MSc in Artificial Intelligence and Computer Vision

September 2008

A Multiresolution Cascade for human detection

University of Brescia

MSc in Electrical Engineering

September 2005

Hierarchical Multiresolution Models for fast Object Detection

EMPLOYMENT

École de Technologies Supérieure

Departement of Automated Manufacturing

February 2017 - Present

Montreal, Canada

Assistant Professor

INRIA Grenoble

THOTH group

September 2015 - December 2016

Grenoble, France

- Research Fellow
- Under the supervision of Cordelia Schmid & Jakob Verbeek

KU Leuven

VISICS group

July 2012 - July 2015

Leuven, Belgium

- Research Fellow
- Under the supervision of Tinne Tuytelaars

VISITS

Oxford University

VGG group

April - August 2010

Oxford, UK

- Under the supervision of Andrea Vedaldi

Philips Applied Technologies

Graduation Project

July 2004 - July 2005

Eindhoven, Netherlands

- Under the supervision of Bart Dirkx

TEACHING EXPERIENCE

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|---|-------------------------------------|
| École de Technologies Supérieure <i>Neural Networks & Artificial Intelligence</i> | September 2017 - Present |
| KU Leuven Teaching Assistant, <i>Embedded Systems & Multimedia</i> | January - May 2014 |
| Autonomous University of Barcelona Teaching Assistant, <i>Computer Science</i> | September - December 2012 |
| Autonomous University of Barcelona Teaching Assistant, <i>Bioinformatics</i> | September - December 2009,2010,2011 |
| Autonomous University of Barcelona Teaching Assistant, <i>Computational Logics</i> | September - December 2008 |

PRIZES & AWARDS

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| Outstanding Reviewer Award IEEE Computer Vision and Pattern Recognition | Boston, 2015 |
| 1st Prize, contest "Generacio d'Idees" project "Ads on Demand" research park Autonomous University of Barcelona | Barcelona, 2012 |
| Best PhD Award PhD program in Computer Science Autonomous University of Barcelona | Barcelona, 2012 |
| 1st Prize, Pascal VOC Workshop part of the CVC Team winner of the Segmentation Challenge European Conference in Computer Vision | Crete, 2010 |
| Visiting Grant for young researches funded by the Catalan Government | Barcelona, 2009 |
| Doctoral Scholarship for young researches funded by the Catalan Government | Barcelona, 2009 |
| 3rd Prize, Robocup part of the Philips Team winner of the Middle Size Ligue | Osaka, 2005 |

PROFESSIONAL SERVICE

Peer-Reviewed Journals

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
IEEE Transactions on Image Processing (TIP)
IEEE Transactions on Multimedia
Computer Vision and Image Understanding (CVIU)
Transactions in Intelligent Transportation Systems (ITS)

Peer-Reviewed Conferences

IEEE Conference in Computer Vision and Pattern Recognition (CVPR)
IEEE International Conference in Computer Vision (ICCV)
European Conference in Computer Vision (ECCV)
Conference in Neural Information Processing Systems (NIPS)
International Conference on Learning Representations (ICLR)

PARTICIPARION IN RESEARCH PROJECTS

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| ERC advanced grant Allegro Active Large-scale Learning for Visual Recognition funded by the European Research Council | 2015-2016 |
| ERC starting grant Cognimund Cognitive Image Understanding Image representations and Multimodal learning funded by the European Research Council | 2012-2014 |
| ViCoMo Visual Context Modelling to improve security and logistics monitoring funded by the Spanish Research Agency | 2009-2012 |
| VidiVideo Interactive Semantic Video Search with a Large Thesaurus of Machine-Learned Audio-Visual Concepts funded by the European Union 6th Framework Programme | 2009-2012 |
| HERMES Human Expressive Graphic Representation of Motion and their Evaluation in Sequences funded by the European Union 6th Framework Programme | 2007-2009 |

INVITED PRESENTATIONS

- A New Multi-modal Query Format*, Vision and Language summer school, KU Leuven, June 2015.
- The future is weakly supervised*, INRIA Rhone-Alpes, Grenoble, May 2015.
- Using a deformation field model for localizing faces and facial points under weak supervision*, Computer Vision Centre, Barcelona, September 2014.
- Hierarchical Multiresolution Models for fast Object Detection*, University of Amsterdam, May 2012.
- A Coarse-to-fine approach for fast deformable object detection*, IEEE Conference on Computer Vision and Pattern Recognition, Columbus, June 2011.

RELEVANT PUBLICATIONS

in peer-reviewed International Journals

- A. Ghodrati, A. Diba, M. Pedersoli, T. Tuytelaars, L. Van Gool, *DeepProposal: Hunting Objects and Actions by Cascading Deep Convolutional Layers*, International Journal of Computer Vision, March 2017.
- J. M. Gonfaus, M. Pedersoli, Jordi Gonzalez, A. Vedaldi, X. Roca, *Factorized Appearances for Object Detection*, Computer Vision and Image Understanding, 138, pp. 92-101, September 2015.
- M. Pedersoli, A. Vedaldi, J. Gonzalez, X. Roca, *A Coarse-to-fine approach for fast deformable object detection*, Pattern Recognition, 48 (5), pp. 1844-1853, May 2015.
- I. Huerta, M. Pedersoli, J. Gonzalez, A. Sanfeliu, *Combining Where and What in Change Detection for Unsupervised Foreground Learning in Surveillance*, Pattern Recognition, 48 (3), pp. 709-719, March 2015.
- M. Pedersoli, R. Timofte, T. Tuytelaars, L. Van Gool, *An Elastic Deformation Field Model for Object Detection and Tracking*, International Journal of Computer Vision 111 (2), pp. 137-152, January 2015.
- M. Pedersoli, J. Gonzalez, Xu Hu, X. Roca, *Towards Real-Time Pedestrian Detection Based on a Deformable Template Model*, IEEE Transactions on Intelligent Transportation Systems, 15(1), pp. 355-364, September 2013.

M. Pedersoli, J. Gonzalez, A. D. Bagdanov, Xavier Roca, *Efficient Discriminative Multiresolution Cascade for Real-Time Human Detection Applications*, Pattern Recognition Letters, 32 (13), pp. 1581-1587, October 2011.

D. Rowe, J. Gonzalez, M. Pedersoli, J. J. Villanueva, *On Tracking Inside Groups*, Machine Vision and Applications, 21 (2), pp. 113-127, February 2010.

in peer-reviewed International Conferences

M. Pedersoli, T. Lucas, C. Schmid, J. Verbeek, *Areas of Attention for Image Captioning*, in International Conference on Computer Vision (ICCV), October 2017.

J. Xu, A. Ghodrati, M. Pedersoli, T. Tuytelaars, *Towards Automatic Image Editing: Learning to See another You*, in Proceedings of the British Machine Vision Conference (BMVC), September 2016.

M. Pedersoli, T. Tuytelaars, *Learning where to position parts in 3D*, International Conference on Computer Vision (ICCV), December 2015.

A. Ghodrati, A. Diba, M. Pedersoli, T. Tuytelaars, L. Van Gool, *DeepBoxes: Hunting Objects by Cascading Deep Convolutional Layers*, International Conference on Computer Vision (ICCV), December 2015.

A. Ghodrati, X. Jia, M. Pedersoli, T. Tuytelaars, *Swap Retrieval: Retrieving Images of Cats When the Query Shows a Dog*, Conference on Multimedia Retrieval (ICMR), June 2015.

H. Bilen, M. Pedersoli, T. Tuytelaars, *Weakly Supervised Object Detection with Convex Clustering*, in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2015.

M. Pedersoli, T. Tuytelaars, *A scalable 3D HOG model for fast object detection and viewpoint estimation*, in Proceedings of the international Conference in 3D Vision (3DV), December 2014.

M. Mathias, R. Benenson, M. Pedersoli, L. Van Gool, *Face detection without bells and whistles*, in Proceedings of the IEEE European Conference on Computer Vision (ECCV), September 2014. (oral presentation)

A. Ghodrati, M. Pedersoli, T. Tuytelaars, *Is 2D information enough for viewpoint estimation?*, in Proceedings of the British Machine Vision Conference (BMVC), September 2014. (oral presentation)

H. Binen, M. Pedersoli, T. Tuytelaars, *Weakly Supervised Object Detection with Posterior Regularization*, in Proceedings of the British Machine Vision Conference (BMVC), September 2014.

M. Pedersoli, T. Tuytelaars, L. Van Gool, *Using a deformation field model for localizing faces and facial points under weak supervision*, in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2014.

H. Bilen, M. Pedersoli, V. P. Namboodiri, T. Tuytelaars, L. Van Gool *Object Classification with Adaptable Regions*, in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2014.

A. Ghodrati, M. Pedersoli, T. Tuytelaars, *Coupling video segmentation and action recognition*, in Proceedings of the IEEE Winter conference on Applications of Computer Vision (WACV), March 2014.

M. Pedersoli, A. Vedaldi, and J. Gonzalez, *A Coarse-to-fine approach for fast deformable object detection*, in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2011. (oral presentation)

N. Shapovalova, W. Gong, M. Pedersoli, F. X. Roca and J. Gonzalez, *On Importance of Interactions and Context in Human Action Recognition*, in 5th Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA), June 2011.

M. Pedersoli, J. Gonzalez, A. D. Bagdanov, J. J. Villanueva, *Recursive Coarse-to-Fine Localization for fast Object Detection*, in Proceedings of the IEEE European Conference on Computer Vision (ECCV), September 2010.

M. Pedersoli, J. Gonzalez, J.J. Villanueva, *High-Speed Human Detection Using a Multiresolution Cascade of Histograms of Oriented Gradients*, in Proceedings of the Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA) June 2009. (oral presentation)

other publications

M. Pedersoli, R. Timofte, T. Tuytelaars, L. Van Gool, *An Elastic Deformation Field Model for Object Detection and Tracking*, KU Leuven technical report 1401, june 2014.

M. Castell, J. Gonzalez, A. Amato, P. Baiget, C. Fernandez, J. M. Gonfaus, R. A. Mollineda, M. Pedersoli, N. Prez de la Blanca, F. X. Roca, *Exploiting Multimodal Interaction Techniques for Video-Surveillance*, Multimodal Interaction in Image and Video Applications, Intelligent Systems Reference Library Vol. 48, Chapter 8, February 2013.

M. Pedersoli, *Hierarchical Multiresolution Models for fast Object Detection*, Phd Thesis, Autonomous University of Barcelona, September 2012.

J. M. Gonfaus, X. Boix, F. S. Khan, J. Van de Weijer, A. D. Bagdanov, M. Pedersoli, J. Serrat, X. Roca, J. Gonzalez, *Harmony Potentials: Fusing Global and Local Scale for Semantic Image Segmentation*, the PASCAL Visual Object Classes Challenge Workshop, in conjunction with ECCV, September 2010.