

David Gerónimo Gómez

Research Scientist in Computer Vision
Catchoom Technologies

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RESEARCH INTERESTS

Computer Vision, Deep Learning, Machine Learning, Object Detection, Autonomous Driving, Data Science.

EDUCATION

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| 2006-2010 | Ph.D. with Honors in Computer Vision , Universitat Autònoma de Barcelona, Spain.
Thesis: "A global approach to vision-based pedestrian detection for advanced driver assistance systems". Advisor: Prof. Antonio M. López. |
| 2004-2006 | M.Sc. in Computer Vision , Computer Vision Center, Spain.
Thesis: "Model features and horizon line estimation for pedestrian detection in advanced driver assistance systems". Advisor: Prof. Antonio M. López. |
| 2002-2004 | B.Sc. in Computer Science , Universitat Autònoma de Barcelona, Spain.
Final Project: "Computer vision applied to intelligent vehicles". Advisor: Prof. Joan Serrat. |
| 1999-2002 | B.Sc. in Technical Engineering in Computer Systems , Univ. Autònoma de Barcelona, Spain. |

PROFESSIONAL EXPERIENCE

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| 2014-now | Research Scientist , Catchoom Technologies, Spain. <ul style="list-style-type: none">• Head of Deep Learning Team.• Research in deep learning for object detection, classification and segmentation.• Development of image retrieval systems for mobile devices. |
| 2013-2014 | Postdoctoral Researcher , KTH Royal Institute of Technology, Sweden. <ul style="list-style-type: none">• 2-yr Postdoc in the Computer Vision and Active Perception Lab (Sup. Hedvig Kjellström).• Topic: Forensic Surveillance Video Analysis (Image- and text-based person retrieval). |
| 2011 | Visiting Fellow , LAAS-CNRS, France. <ul style="list-style-type: none">• 6-month stay at the Robotics, Action and Perception Lab (Sup. Frédéric Lerasle).• Topic: State-based multi-target particle filtering tracking. |
| 2010-2012 | Postdoctoral Researcher and Assistant Lecturer , Univ. Autònoma de Barcelona, Spain. <ul style="list-style-type: none">• Research in pedestrian detection and tracking.• Teaching Assistant of BSc in Computer Science and BSc in Telecommunications.• Assistant Lecturer and Project Coordinator of MSc in Computer Vision. |
| 2010-2012 | Assistant Lecturer , Universitat Oberta de Catalunya, Spain. <ul style="list-style-type: none">• Assistant Lecturer in an Online Education University in several BSc Degrees. |
| 2007 | PhD Student Internship , University of Surrey, United Kingdom. <ul style="list-style-type: none">• 6-month stay at the Centre for Vision, Speech and Signal Proc. (Sup. Krystian Mikołajczyk)• Topic: Multi-class object classification based on hierarchical implicit shape models. |

- 2006-2010 | **PhD Student**, Computer Vision Center, Spain.
- 3.5-yr (Sup. Antonio M. López).
 - Topic: Pedestrian Detection in Advanced Driver Assistance Systems.
 - Development of a driver assistance framework (+200k lines, VC++), datasets, etc.
 - Developer of group and project websites.
 - Teaching Assistant of BSc in Computer Science.

RESEARCH GRANTS

- 2013-2014 | **Beatriu de Pinós (Marie Curie Actions) Postdoctoral Grant** (Catalan Government)
Competitive, 8% applications are granted. (Declined in Oct-2014)
- 2011 | **AIRE-CTP Postdoctoral Mobility Grant** (Catalan Government)
Competitive, 9% applications are granted (ranked 1st).
- 2007 | **FPI Doctoral Mobility Grant** (Spanish Government)
Competitive.
- 2005-2009 | **FPI Doctoral Fellowship** (Spanish Government)
Competitive.
- 2004-2008 | **FPD Doctoral Fellowship** (Universitat Autònoma de Barcelona)
(Declined in 2005)

PARTICIPATION IN PUBLIC FUNDING PROJECTS

- 2013-2014 | **FOVIAL: FOrensic VIdeo AnaLysis** - finding out what really happened.
(Vetenskapsrådet - Swedish Research Council Project 2013-5473)
- 2012 | **eCo-DRIVERS: Ecologic Cooperative Driver and Road Intelligent Visual Exploration for Route Safety.** (Spanish MEC Project TRA2011-29454-C03-00-00)
<http://www.cvc.uab.es/adas/projects/eco-drivers/>
- 2007-2012 | **MIPRCV: Multimodal Interaction in Pattern Recognition and Computer Vision.**
(Spanish CONSOLIDER INGENIO-2010 Project CSD2007-00018)
- 2007-2010 | **Computer Vision Based Detection and Tracking of Vehicles and Pedestrians for ADAS.**
(Spanish MEC Project TRA2007-62526/AUT)
- 2004-2007 | **Computer Vision Detection and Tracking of Vehicles, Pedestrians. Validation on an Intelligent Vehicle Prototype.**
(Spanish MEC Project MEC TRA2004-06702/AUT)

AWARDS AND CERTIFICATES

- 2012 | **Extraordinary Doctorate Award 2009-2010**
- 2010 | **Assistant Professor Certificate (Lector) – AQU** (Catalan Gov.)
- 2010 | **Assistant Professor Certificate (Profesor Ayudante Doctor) – ANECA** (Spanish Gov.)
- 2010 | **Doctor Europaeus Certificate**

PUBLICATIONS

Journals

D. Vázquez, A.M. López, J. Marín, D. Ponsa and D. Gerónimo, "**Virtual and Real World Adaptation for Pedestrian Detection**". In *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 3636, Num. 4, pp. 797–809, 2014.

D. Gerónimo, J. Serrat, A.M. López and R. Baldrich, "**Traffic Sign Recognition for Computer Vision Project-Based Learning**". In *IEEE Transactions on Education*, Vol. 56, Num. 3, pp.364-371, 2013.

D. Gerónimo, A.M. López, A.D. Sappa and T. Graf, "**Survey of Pedestrian Detection for Advanced Driver Assistance Systems**". In *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 32, Num. 7, pp.1239-1258, 2010.

D. Gerónimo, A.D. Sappa, D. Ponsa and A.M. López, "**2D-3D-based on-board pedestrian detection system**", In *Computer Vision and Image Understanding (Special Issue on Intelligent Vision Systems)*, Vol. 114, Num. 5, pp. 583-595, 2010.

A.D. Sappa, F. Dornaika, D. Ponsa, D. Gerónimo and A. López. "**An Efficient Approach to Onboard Stereo Vision System Pose Estimation**", In *IEEE Transactions on Intelligent Transportation Systems*, Vol. 9, Num. 3, pp. 476-490. 2008.

A.D. Sappa, D. Gerónimo, F. Dornaika and A. López, "**On-board camera extrinsic parameter estimation**", *IEE Electronics Letters*, 42(13), pp. 645-747, 2006.

Conferences

D. Gerónimo and H. Kjellström, "**Generative One-Class Models for Text-based Person Retrieval in Forensic Applications**", arXiv:1611.05915 [cs.CV], 2016.

D. Gerónimo and H. Kjellström, "**Unsupervised surveillance video retrieval based on human action and appearance**", *Proc. International Conference on Pattern Recognition*, pp. 4630–4635, Stockholm, Sweden, 2014.

D. Gerónimo, F. Lerasle and A. M. López, "**State-driven particle filter for multi-person tracking**", *Proc. Advanced Concepts for Intelligent Vision Systems, Brno, Czech Republic*, 2012.

Y. Socarrás, A.M. López, D. Vázquez, D. Gerónimo and T. Gevers, "**Improving Histogram of Oriented Gradients with Image Segmentation: Application to Human Detection**", *Proc. Advanced Concepts for Intelligent Vision Systems, Brno, Czech Republic*, 2012.

K. Paleček, D. Gerónimo and F. Lerasle, "**Pre-attention cues for person detection**", *COST 2012 Training School*, pp. 225-235, Dresden, Germany, 2011.

J. Amores, D. Gerónimo and A.M. López, "**Multiple instance learning for weakly-supervised object-class segmentation**", In *Proc. International Conf. on Machine Vision, Hong Kong, China*, 2010.

J. Marín, D. Vázquez, D. Gerónimo and A.M. López, "**Learning appearance in virtual scenarios for**

pedestrian detection", *In Proc. IEEE Int. Conf. on Computer Vision and Pattern Recognition, San Francisco, 2010.*

A.D.Sappa, F. Dornaika, D. Gerónimo and A.M. López, "**Registration-based moving object detection from moving camera**", *In Proc. International Conference on Intelligent Robots and Systems, 2nd Workshop on Planning, Perception and Navigation for Intelligent Vehicles, pp. 65-69. Nice, France, 2008.*

D. Gerónimo, A.D. Sappa, J. Alvarez and A. López. "**Searching space reduction for on-board pedestrian detection**". *In Current Challenges in Computer Vision. Proc. Of the Third CVC Workshop, pp. 7-12. 2008.*

D. Gerónimo, A.D. Sappa, A. López and D. Ponsa, "**Adaptive Image Sampling and Windows Classification for On-Board Pedestrian Detection**", *In Proc. Intl. Conference on Computer Vision Systems. Bielefeld, Germany, 2007.*

D. Gerónimo, A. López and A. Sappa. "**Computer Vision Approaches to Pedestrian Detection: Visible Spectrum Survey**", *In Proc. of the 3rd Iberian Conference on Pattern Recognition and Image Analysis, Part 1, LNCS 4477, pp.547-554. Girona, Spain, 2007.*

D. Gerónimo, A. López, D. Ponsa and A. Sappa. "**Haar Wavelets and Edge Orientation Histograms for On-Board Pedestrian Detection**", *In Proc. of the 3rd Iberian Conference on Pattern Recognition and Image Analysis, Part 1, LNCS 4477, pp. 418-425. Girona, Spain, 2007.*

A.D. Sappa, F. Dornaika, D. Gerónimo and A. López, "**Efficient On-Board Stereo Pose Estimation**", *In Proc. EUROCAST 2007, Workshop on Cybercars and Intelligent Vehicles, LNCS 4739, pp. 1183-1190. Las Palmas de Gran Canaria, Spain, 2007.*

A.D. Sappa, R. Herrero, F. Dornaika, D. Gerónimo and A. López, "**Road Approximation in Euclidean and v-disparity space: A Comparative Study**", *In Proc. EUROCAST 2007, Workshop on Cybercars and Intelligent Vehicles, LNCS 4739, pp. 1105-1112. Las Palmas de Gran Canaria, Spain, 2007.*

A.D. Sappa, D. Gerónimo, F. Dornaika and A. López, "**Real Time Vehicle Pose Using On-Board Stereo-Vision System**", *In Proc. Intl. Conference on Image Analysis and Recognition, LNCS 4142, pp. 205-216, Póvoa de Varzim, Portugal, 2006.*

D. Gerónimo, A.D. Sappa, A. López and D. Ponsa, "**Pedestrian Detection using AdaBoost learning of features and vehicle pitch estimation**", *In Proc. IASTED Intl. Confernce on Visualization, Imaging and Image Processing, pp. 400-405, Palma de Mallorca, Spain, 2006.*

Books

D. Gerónimo and A.M. López, "**Vision-based pedestrian protection systems for intelligent vehicles**", SpringerBriefs in Computer Science, Springer, ISBN 978-1-4614-7987-1, 2014.

F. Diego, D. Gerónimo and J. Vazquez-Corral (Eds.), "**State of the Art of Research and Development in Computer Vision. Proceedings of the Sixth CVC Workshop**", Computer Vision Center, ISBN-978-84-938351-5-6, 2011.

Book Chapters

D. Gerónimo, D. Vázquez, A. de la Escalera, "**Vision-based Advanced Driver Assistance Systems**", in *Computer Vision in Vehicle Technology: Land, Sea and Air* (Ed. A.M. López, A. Imiya, T. Pajdla, J.M. Álvarez), Wiley, ISBN: 978-1-118-86807-2, pp. 95-117, 2017.

D. Vázquez, A.M. López, D. Ponsa and D. Gerónimo, "**Interactive training of human detectors**", in *Multimodal Interaction in Image and Video Applications* (Ed. A.D. Sappa and Jordi Vitrià), Springer, pp. 169-184, 2013.

J. Marín, D. Gerónimo, D. Vázquez and A.M. López, "**Pedestrian detection: exploring virtual worlds**", in *Handbook of Pattern Recognition: Methods and Applications* (Ed. K. Hosny and J. de la Calleja), i-Concept Press, 2012.

A.D. Sappa, D. Gerónimo, F. Dornaika, M. Rouhani and A.M. López, "**Moving object detection from mobile platforms using stereo data registration**", *Chapter 3 in Computational Intelligence Paradigms in Advanced Pattern Classification. Studies in Computational Intelligence* (Ed. M.R. Ogiela and L.C. Jain), Springer-Verlag Book Series, vol. 386/2012, pp. 25–37, 2012.

D. Gerónimo, A.D. Sappa and A.M. López, "**Stereo-based Candidate Generation for Pedestrian Protection Systems**". *Chapter 9 in Binocular Vision: Development, Depth and Disorders* (Ed. Jacques McCoun and Lucien Reeves), NOVA Publishers, pp. 189–208, 2010.

A.D. Sappa, D. Gerónimo, F. Dornaika and A. López, "**Stereo vision camera pose estimation for On-board applications**", *Chapter 3 in Scene Reconstruction, Pose Estimation and Tracking, Rustam Stoking*, pp. 39-50, 2007.

Non-Indexed Publications

D. Gerónimo, "**People Power**", *In Vision Zero International*, pp. 28-33, January 2011.

D. Gerónimo and A.M. López, "**Detecció de vianants per a sistemes avançats d'assistència al conductor**" (*Spanish/Catalan*). *In UAB Divulga*, September 2010.

D. Gerónimo and A.M. López, "**Sistema de detecció de vianants**" (*Spanish/Catalan*). *In UAB Divulga*, April 2010.

STUDENT ADVISING

2017	Pierre Saelins - BSc Student at Catchoom Technologies (Spain) "Deep Learning applied to fashion images"
2012	Albert Saà - MSc Student at CVC (Spain) "Traffic lights recognition in images for intelligent vehicles"
2011	Karel Paleček (co-advised with F. Lerasle) - PhD Internship at LAAS-CNRS (France) "Pre-attention cues for person detection"
2009	Hilda Caballero (co-advised with A.M. López) - MSc Student at CVC (Spain) "Pedestrian detection refinement via non-explicit shape models"
2009	David Vázquez (co-advised with A.M. López) - MSc Student at CVC (Spain) "The effect of the distance in pedestrian detection"

TEACHING EXPERIENCE

Universitat Oberta de Catalunya

2010/11/12	Object-oriented design and programming (Java Lab) (BSc in Computer Science, BSc in Telecommunications and BSc in Multimedia)
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Universitat Autònoma de Barcelona

2012	Computer Vision Module 3 Project (MSc Computer Vision & Artificial Intelligence)
2012	Foundations of Software Engineering (BSc in Telecommunications)
2009/10/11	Local Image Descriptors (MSc Computer Vision & Artificial Intelligence)
2010	Software Engineering 1 (BSc in Computer Science)
2010	Computer Graphics 1 (BSc in Computer Science)
2010	Graphical Techniques (BSc in Computer Science)
2008/09	Software Engineering 2 (BSc in Computer Science)
2004	Programming Languages (BSc in Computer Science)

SEMINARS AND COURSES

2016	Buddhism and Modern Psychology , Coursera (Princeton University)
2016	Introduction to Marketing , Coursera (University of Pennsylvania)
2016	Fundamentals of Project Planning and Management , Coursera (University of Virginia)
2015	Executive Master in Innovation , Escuela de Organización Industrial, Madrid, Spain
2014	Intro to Data Science , Udacity.
2014	Discrete Inference and Learning in Artificial Vision , Coursera (École Centrale Paris).
2012	Introduction to European R&D&I Projects (H2020) , AGAUR, Barcelona, Spain.
2012	Machine Learning , Coursera (Stanford University).
2008	AERFAI Summer School on New Trends in Pat.Rec.for Motion Analysis , Barcelona, Spain.
2007	Fifth Int. Summer School on Pattern Recognition , Plymouth, United Kingdom.
2006	Fifth LEARNING Workshop (LARCA & PASCAL Dialogues) , Vilanova i la Geltrú, Spain.

2006 | **AERFAI Summer School on Action and Object Classification Techniques in Digital Images**, Granada, Spain.

PROFESSIONAL SERVICE

Organization and Boards

2013/14 General Chair – Int. Workshop of Computer Vision in Vehicle Technology
2011/12 Organizing Chair – Int. Workshop of Computer Vision in Vehicle Technology
2011 Local Arrangement – Int. Conference on Computer Vision (ICCV)
2011 General Chair – CVC Workshop on R&D
2011 Editorial Board – Int. Journal of Computer Vision and Signal Processing

Program Committees

2015 Int. Conf. Computer Vision Systems (ICVS)
2015/16/17 Int. Workshop of Computer Vision in Vehicle Technology
2014 Workshop on Scene Understanding for Autonomous Systems (@ACCV14)
2014-17 Workshop on Activity Monitoring by multiple distributed sensing
2010-2013 IASTED Conf. on Comp. Graphics and Imaging
2011/13 Int. Conf. on Informatics, Electronics & Vision
2012 ACM/IEEE/IFAC/TRB Int. Conf. on Connected Vehicles and Expo
2011 IASTED Conf. on Computer Vision

Journal Reviewing

2011-17 IEEE Transactions on Intelligent Transportation Systems (TITS)
2016 IEEE Transactions on Cybernetics (TCyb)
2011/13/14 Computer Vision and Image Understanding – Elsevier (CVIU)
2014 Electronic Letters on Computer Vision and Image Analysis (ELCVIA)
2013 Int. Journal of Computer Vision – Springer (IJCV)
2013 Signal Image and Video Processing – Springer
2013 Pattern Recognition Letters – Elsevier (PRL)
2013 IEEE Transactions on Circuits and Systems for Video Technology
2010-2013 IEEE Transactions on Neural Networks and Learning Systems (TNN)
2012/13 IEEE Transactions on Vehicular Technology (TVT)
2012/13 Optical Engineering – SPIE
2012 IET Image Processing (TIP)
2012 IEEE Transactions on Education
2012 Scientific Research and Essays
2012 Applied Soft Computing – Elsevier
2011 Int. Journal of Computer Vision and Signal Processing
2011 Aerospace Science & Technology – Elsevier
2010 Computers and Mathematics with Applications – Elsevier
2010 Journal of Real-time Image Processing – Springer

Conference Reviewing

2017 ACM Multimedia (MM)
2014-17 IEEE Int'l Conf. on Computer Vision and Pattern Recognition (CVPR)
2015,17 Int'l Conf. On Computer Vision (ICCV)
2017 British Machine Vision Conference (BMVC)
2014, 16 European Conference on Computer Vision (ECCV)

- 2016 Asian Conference on Computer Vision (ACCV)
- 2015 IEEE Int'l Conf. on Robotics and Automation (ICRA)
- 2009-2015 IEEE Int'l Conf. on Image Processing (ICIP)
- 2014 IEEE Int'l Conf. On Pattern Recognition (ICPR)
- 2010-11/13-15 IEEE Int'l Conf. Intelligent Vehicles Symposium (IV)
- 2010/13/15 IEEE Int'l Conf. Intelligent Transportation Systems (ITSC)
- 2010-2013 IASTED Conf. on Comp. Graphics and Imaging
- 2011-2013 Int. Workshop of Computer Vision in Vehicle Technology (CVT)
- 2012 EURASIP European Signal Processing Conference
- 2011 IASTED Conf. on Comp. Vision
- 2007-2009 Int'l Conf. on Intelligent Computing

Other Services

- 2015 Project Reviewer of the STW - Netherland Technology foundation
- 2013 Project Reviewer of FONDECYT - Ministry of Education of Chile
- 2013 PhD Thesis Committee (M. R. Anwer)
- 2011 MSc Thesis Committee (R. Gimeno, L. Ruíz, Y. Socarrás)
- 2011 IET Book Reviewer

TECHNICAL SKILLS

Languages	C/C++, Lua, Python, Java, Matlab, PHP, Javascript, SQL, OpenGL, OpenCV, QT, Latex.
OS	Windows, Linux, Android.

LANGUAGES

English	Full Professional Proficiency (C1/C2)
Swedish	Limited Working Proficiency (currently studying B2.2)
French	Elementary Proficiency (A2, fading)
Catalan	Native
Spanish	Native

OTHER NON-SCIENTIFIC ACTIVITIES / HOBBIES

Web Development.

Technologies: HTML, CSS, PHP, JavaScript, SQL, AJAX, Photoshop, etc.

- 1999-now *yero.org* (<http://yero.org>) - personal art portfolio
- 2005-2013 *ADAS Group* (<http://www.cvc.uab.es/adas>) - research group
- 2000-2013 *Modulez* (<http://modulez.org>) - amateur music portal
- 2002-2006 *Spanish Report System* (down) - photo aggregator
- 2000 *Website of the Faculty of Communication Studies (UAB)* (down)

Real Time Motion Graphics Development (Demoscene) (+info @ <http://sectoromega.org>)

Technologies: C++, OpenGL, Visual Studio, Photoshop, 3DSMax, Impulse Tracker, etc.

- 2005 *The Message* (as Programmer, Graphics 2D) - 2nd @ Demo Competition. BCNParty
- 2004 *Decadentia* (as Graphics 2D/3D) - 1st @ Demo Competition. IfParty
- 2004 *Nagatabi* (as Programmer, Graphics 2D/3D) - 2nd @ Demo Competition. BCNParty

- 2003 *Mirages* (as Programmer, Graphics 2D/3D) - 3rd @ Demo Competition. BCNParty
- 2002-2003 *Module Addiction Musicdisks* (as Organizer, Graphics, Music)
- 2002 *Euskal Invtro* (as Musician) - EuskalParty'02
- 1998-2005 Musician at different Spanish and European demoscene/modscene groups