

CURRICULUM VITAE OF VITTORIO MURINO

- Personal data:** Date of birth: 20 September 1964, Lavagna (GE), Italy. Italian citizen.
- Working address:** Dipartimento di Informatica, University of Verona
Ca' Vignal 2, Strada Le Grazie 15, 37134 Verona, Italy
Phone: 045 8027996, Mobile: +39 329 6508554
Email: vittorio.murino@univr.it
Web: <http://profs.sci.univr.it/~swan/>
- Formerly:** Istituto Italiano di Tecnologia
Via Enrico Melen 83, Building B, 16152 Genova, Italy
- Former position:** **Director of the Pattern Analysis & Computer Vision (PAVIS)** department,
Istituto Italiano di Tecnologia (IIT), Genova, Italy
<http://pavis.iit.it>
- Current position:** **Full professor @ University of Verona, Italy**
and
**Senior Video Intelligence Expert @ Huawei Technologies (Ireland) Co., Ltd.,
Video Competence Centre, Ireland Research Centre, Dublin, Ireland**
Email: vittorio.murino@huawei.com

QUALIFICATIONS

- Laurea degree in Electronic Engineering, University of Genova, Italy, 1989 (*summa cum laude*).
- Ph.D. in Electronic Engineering & Computer Science, University of Genoa, 1992 (topics in Signal and Image Processing, Computer Vision, Pattern Recognition).
- Post-Doctoral Fellowship in Signal & Image Processing and Computer Science, Department of Biophysical & Electronic Engineering (DIBE), University of Genova, 1994 - 1995.
- Assistant Professor from 1995 to 1998, University of Udine, Italy.
Associate Professor from 1998 to 2000, University of Verona, Italy.
Full Professor since 2000, University of Verona, Italy.
- Chairman of Department of Computer Science (Dipartimento di Informatica) of the University of Verona from 2001 (year of foundation) to 2007.
- Coordinator of the Ph.D. program in Computer Science (*Informatica*) of the University of Verona from 1999 to 2003.
- Director of the Pattern Analysis & Computer Vision (PAVIS) department, Istituto Italiano di Tecnologia (IIT), Genova, Italy, from 2009 to 2019. Web: <http://pavis.iit.it>
- Registered Professional Engineer in Italy from 1991 (no. 6353). From 1990 to 1995, Dr. Murino also worked as professional scientific consultant mainly involved in research projects performed by DIBE, University of Genoa, Italy.
- Promoter and founder in 2005 of *eVS embedded Vision Systems S.r.l.*, the first start-up company of the University of Verona. Web: <http://www.embeddedvisionsystems.it/>
- Appointed inventor for 6 patents.
- Evaluator, since 1996, of European RTD project proposals in the context of the IV, V, VI, VII and H2020 Framework Programmes. Research programmes involved: MAST (marine science), BRITE-EURAM (industrial), ESPRIT Long Term Research (basic and fundamental research), Competitive and Sustainable Growth (industrial), Information Society Technology (ICT), Improving Human Potential,

New and Emerging Science and technology (NEST), Information and Communication Technology (ICT), European Research Council (ERC, basic and fundamental research).

- Reviewer of research projects. After the first job in 2002 for the review of a project in the EU programme *Quality of Life and Management of Living Resources*, I acted as reviewer of the following EU-funded projects:
 - 2005-2007: Integrated Project AMI – Augmented Multimodal Interaction (6th Framework Programme).
 - 2009-2011: Collaborative (STREP) projects PROMETHEUS (7th Framework Programme, Information & Communication Technology).
 - 2009-2011: ADABTS – Automatic Detection of Abnormal Behaviour and Threats in crowded Spaces (7th Framework Programme, Security).
- Evaluator of project proposals for several research national organizations: *Israel Science Foundation*, *Swiss National Science Foundation*, *American National Science Foundation (NSF)*, *Italian Ministry of University and Research (MIUR)*, several University and Research funding institutes (e.g., *Fondazione Bruno Kessler FBK – Trento, Italy*; *Katholieke Universiteit Leuven, The Netherlands*, and others), and reviewer of several PhD theses (Italian and European).
- Associate Editor of the following journals:
 - *Computer Vision and Image Understanding* (since 2014).
 - *Machine Vision and Applications* (since 2006).
 - *Pattern Analysis and Applications* (2004-2020).
 - *IEEE Transactions on Cybernetics*, formerly *IEEE Transactions of Systems, Man, & Cybernetics, Part B: Cybernetics* (1999-2016).
 - *Pattern Recognition* (1999-2016).
 - *ELCVIA*, an international electronic journal on research and applications in Computer Vision and Image Analysis (2001-2010).
- Organizer and Guest Co-Editor of the following special issues:
 - “Underwater Computer Vision and Pattern Recognition”. *Computer Vision and Image Understanding*, Vol. 79, No. 1, July 2000.
 - “Artificial Neural Networks for Image Analysis and Computer Vision”. *Image and Vision Computing*, Vol. 19, No. 9-10, August 2001.
 - “3-D Image Analysis and Modeling”. *IEEE Transactions on Systems, Man and Cybernetics, Part B: Cybernetics*, August 2003.
 - “Similarity-based Pattern Recognition”. *Pattern Recognition*, Vol. 39, No. 10, October 2006.
 - “Learning in Non-(geo)metric Spaces”. *IEEE Transactions on Neural Networks and Learning Systems*, Issue 6, June 2016.
 - “Image and Video Understanding in Big Data”, *Computer Vision and Image Understanding*, Vol. 156, March 2017.
 - “Language in Vision”, *Computer Vision and Image Understanding*, Vol. 163, pp. 1-138, October 2017.
- Organizer and Co-Editor of the following books:
 - *Algorithmic Advances in Riemannian Geometry and Applications. For Machine Learning, Computer Vision, Statistics, and Optimization*. Minh Hà Quang and Vittorio Murino Eds. ISBN: 978-3-319-45025-4 (Print), 978-3-319-45026-1 (Online). Springer, 2016.
<http://link.springer.com/book/10.1007/978-3-319-45026-1>
 - *Group and Crowd Behavior for Computer Vision*. Vittorio Murino, Marco Cristani, Shishir Shah, and Silvio Savarese Eds., eBook ISBN: 9780128092804, Hardcover ISBN: 97801280927672017, Academic Press, 2017.
 - *Multimodal Scene Understanding: Algorithms, Applications and Deep Learning*. Michael Ying Yang, Bodo Rosenhahn, and Vittorio Murino Eds., Paperback ISBN: 9780128173589, Academic Press, 2019.

- Co-Author of the book: *Covariances in Computer Vision and Machine Learning*, by Minh Hà Quang and Vittorio Murino, Synthesis Lectures on Computer Vision, Morgan & Claypool, 2017.
- Invited talks and tutorials:
 - *Invited talk* titled “Facing the dataset bias: domain adaptation and generalization”, 3rd IEEE Int’l Conf. on Image Processing, Applications and Systems IPAS 2018, INRIA Sophia Antipolis, France, December 2018.
 - *Invited talk* titled “Understanding Human Intentions and Actions from Kinematics”, Instituto Superior Tecnico, Lisbon, Portugal, March 2018.
 - *Invited talk* titled “Person Re-identification: state of the art and current trends”. 6th Int’l Conf. on Pattern Recognition Applications and Methods ICPRAM 2017, Porto, Portugal, February 2017.
 - *Tutorial* on “State of the Art and Recent Trends in Social Signal Processing”, together with Marco Cristani, Alessandro Vinciarelli, Bruno Lepri, held in conjunction with the IEEE Computer Vision and Pattern Recognition conference CVPR 2016, Las Vegas, USA, 26 June 2016.
 - *Invited talk* titled “Groups and Crowds: Detection, Tracking and Behavior Analysis of People Aggregations”. 11th Int’l Conference on Computer Vision Theory and Applications VISAPP 2016, Rome, Italy, February 2016.
 - *Invited talk* at OMRON company, Kyoto, Japan, December 2014.
 - *Invited talk* at Czech Technical University Prague for the 33rd Pattern Recognition and Computer Vision Colloquium, November 2013.
 - *Invited talk* at the Xerox Research Center Europe, Grenoble, France, February 2013.
 - *Tutorial* on Similarity-based Pattern Recognition, by E. Hancock, V. Murino, M. Pelillo, R. Wilson, held in conjunction with the European Conference in Computer Vision, Florence, Italy, 7 October 2012.
 - *Invited talk* at the 8th IEEE Workshop on Embedded Vision, June 16, 2013, Providence, USA.
 - *Invited talk* at the 5th Int’l Computer Vision Summer School ICVSS 2011 – Registration, Recognition and Reconstruction in Images and Video, Scicli (Ragusa), July 2011.
 - *Invited talk* at Workshop on Emerging Surveillance Technologies and Requirements, Joint Research Center, Ispra (Varese), Italy, July 2011.
 - *Invited talk* at 1st Short Spring School on Surveillance (S4), Modena, Italy, May 2011.
- Director of the VIPS Schools in Computer Vision, Pattern Recognition, and Image Processing, 2004-2010 (10 editions so far). For more information, <http://vips.sci.univr.it/html/events.html>.
- Director of the PAVIS Schools in Computer Vision, Pattern Recognition, and Image Processing, 2010-2014 (5 editions so far). For more information: <https://pavis.iit.it/events/schools>.
- Organizational roles for major events:
 - *Area Chair* for Winter Conference on Applications of Computer Vision WACV 2021, Waikoloa, Hawaii, USA, January 2021.
 - *Area Chair* for Neural Information Processing Systems NeurIPS 2020, Vancouver, Canada, December 2020.
 - *Area Chair* for British Machine Vision Conference BMVC 2020, Manchester, UK, September 2020.
 - *Area Chair* for European Conference on Computer Vision ECCV 2020, Glasgow, Scotland, August 2020.
 - *Associate Editor* (aka *Area Chair*) for Int’l Conference on Pattern Recognition ICPR 2020, Milan, Italy, January 2021 (Track 3: Computer Vision Robotics and Intelligent Systems).
 - *Co-organizer and co-chair* (together with M. Daoudi, M. Harandi) of the Workshop on Manifold Learning, From Euclid to Riemann, a satellite ICPR 2020 Workshop, Milan, Italy, January 2021.
 - *Co-organizer and co-chair* (together with F. Pernici, F. Becattini, Moi Hoon Yap) of the Workshop on Facial and Body Expressions, micro-expressions and behavior recognition – FBE2020, a satellite ICPR 2020 Workshop, Milan, Italy, January 2021.
 - *Co-organizer and co-chair* (together with L. Di Stefano, P. Rota, F. Setti, M. Mancini) of the Workshop on Industrial Machine learning, a satellite ICPR 2020 Workshop, Milan, Italy, January 2021.

- *Co-organizer and co-chair* (together with M. Aghaei, C. Beyan, F. De La Torre, A. Del Bue, L. Natale) of the 2nd Workshop on Applications of Egocentric Vision EgoApp 2020, a satellite ICPR 2020 Workshop, Milan, Italy, January 2021.
- *Co-organizer and co-chair* (together with S. Joshi, B. Vemuri, P. Turaga, A. Srivastava) of the 5th International Workshop on Differential Geometry in Computer Vision and Machine Learning, Diff-CVML 2020, a satellite CVPR 2020 Workshop, Seattle, WA, USA, June 2020.
- *Co-organizer and co-chair* (together with L-P. Morency, P. Morerio, B. Rosenhahn, P. Rota, M. Ying Yang, A. Zadeh) of the Workshop on Multimodal Learning MUL 2020, a satellite CVPR 2020 Workshop, Seattle, WA, USA, June 2020.
- *Senior program committee member (SPC)* for Int'l Joint Conference on Artificial Intelligence – Pacific Rim Int'l Conference on Artificial Intelligence IJCAI-PRICAI 2020, Yokohama, Japan, July 2020.
- *Finance Chair and Tutorial Chair* for Int'l Conference on Pattern Recognition ICPR 2020, Milan, Italy, September 2020.
- *Area Chair* for Int'l Conference on Computer Vision ICCV 2019, Seoul, South Korea, October 2019.
- *Area Chair* for British Machine Vision Conference BMVC 2019, Cardiff, Wales, September 2019.
- *Area Chair* for IAPR Conference on Machine Vision Applications MVA 2019, Tokyo, Japan, May 2019.
- *Co-organizer and co-chair* (together with P. Morerio, P. Rota, M. Ying Yang and B. Rosenhahn) of the 2nd Int'l Workshop on MULTimodal Learning and Applications (MULA 2019), a satellite workshop held in conjunction with CVPR 2019, Long Beach, CA, USA, June 2019.
- *Area Chair* for European Conference on Computer Vision ECCV 2018.
- *Area Chair* for British Machine Vision Conference BMVC 2018.
- *Area Chair* for Int'l Conference on Pattern Recognition ICPR 2018.
- *Co-organizer and co-chair* (together with P. Rota, M. Ying Yang and B. Rosenhahn) of the 1st Int'l Workshop on MULTimodal Learning and Applications (MULA 2018), a satellite workshop held in conjunction with ECCV 2018, Munich, Germany, September 2018.
- *Co-organizer and co-chair* (together with Rama Chellappa, Richard Hartley, Anuj Srivastava, Pavan Turaga, Baba Vemuri, Rene Vidal) of the 4th Int'l Workshop on Diff-CVML: Differential Geometry in Computer Vision and Machine Learning, a satellite workshop held in conjunction with CVPR 2018, Salt Lake City, 18 June 2018.
- *Area Chair* for Int'l Conference on Computer Vision ICCV 2017.
- *Tutorial Co-Chair* (together with Tal Hassner) for Int'l Conference on Computer Vision ICCV 2017.
- *Co-organizer and co-chair* (together with Mohamed Daoudi, Mehrtash Harandi and Richard Hartley) of the Int'l Workshop on Manifold Learning: from Euclid to Riemann, a satellite workshop held in conjunction with ICCV 2017, Venice, Italy, 28 October 2017.
- *Area Chair* for Int'l Conference on Image Analysis and Processing ICIAP 2017.
- *Area Chair* for Int'l Conference on Pattern Recognition ICPR 2016.
- *General Chair* of the Int'l Conf. on Image Analysis and Processing ICIAP 2015, Genova, Italy, 7-11 Sept. 2015.
- *Co-organizer* of the Dagstuhl Seminar no. 15081 titled “Holistic Scene Understanding”, together with Jirí Matas, Laura Leal-Taixé, and Bodo Rosenhahn, 15-20 February 2015.
- *Co-organizer and co-chair* (together with Marco Cristani, Shishir Shah and Silvio Savarese) of the 1st Int'l Workshop on GRoup and crOWd behavior analysis and understanding GROW 2015, a satellite workshop held in conjunction with CVPR 2015, Boston, 11 June 2015.
- *Co-organizer and co-chair* (together with Minh Hà Quang) of the NIPS 2014 Workshop on Riemannian Geometry in Machine Learning, Statistics and Computer Vision, Montreal, Canada, December 13, 2014.
- *Area Chair* of the Int'l Conf. on Image Analysis and Processing ICIAP 2013, Naples, Italy, Sept. 2013.
- *Steering Committee and Programme Committee member* of the 2nd and 3rd Int'l Workshop on Similarity-based Pattern Analysis and Recognition, SIMBAD 2013 (York, UK, July 2013) and SIMBAD 2015 (Copenhagen, Denmark, October 2015).

- *Workshop co-chair* (together Andrea Fusiello) of the European Conference on Computer Vision ECCV 2012, Florence, Italy, 7-13 October 2012.
- *Program co-chair* of the 2nd International Workshop on Pattern Recognition in NeuroImaging PRNI 2012, July 2-4, 2012, UCL, London, UK.
- *Co-organizer and co-chair* of the 3rd Intl. Workshop on Socially Intelligent Surveillance and Monitoring, SISM 2012, satellite workshop of the Int'l Conf. on Computer Vision and Pattern Recognition CVPR 2012, Providence, Rhode Island, USA, 21 June 2012.
- *Co-organizer and co-chair* of the Machine Learning & Interpretation in Neuroimaging MLINI 2011, a satellite workshop of the Int'l. Conf. on Neural Information Processing Systems NIPS 2011, Sierra Nevada, Spain, 16-17 Dec. 2011. URL: <https://sites.google.com/site/mlini2011/>
- *Co-organizer and co-chair* of the 2nd Intl. Workshop on Socially Intelligent Surveillance and Monitoring, SISM 2011, satellite workshop of the Int'l Conf. on Computer Vision, ICCV 2011, Barcelona, Spain, 12 November 2011.
- *Advisory Committee member* of the 2011 Multimedia Signal Processing school.
- *Steering Committee and Programme Committee member* of the 1st Int'l Workshop on Similarity-based Pattern Analysis and Recognition SIMBAD 2011, Venice, Italy, Sept. 2011.
- *Co-organizer and co-chair* of the Workshop on Multimodal Pervasive Video Analysis, MPVA 2010, satellite workshop of the ACM Multimedia conference 2010, Florence, Italy, 29 October 2010.
- *Co-organizer and co-chair* of the 1st Intl. Workshop on Socially Intelligent Surveillance and Monitoring, SISM 2010, satellite workshop of the IEEE Int'l Conf. on Computer Vision and Pattern Recognition CVPR 2010, San Francisco, CA, USA, 14 June 2010.
- Co-organizer, together with prof. Janaina Mourao-Miranda and Dr. Moritz Grosse-Wentrup, of the Cognitive Inference and Neuroimaging PASCAL2 Thematic Programme aimed at fostering interactions between neuroimaging and machine learning communities by supporting a series of workshops at neuroimaging as well as machine learning venues (2010-2012).
- Reviewer for several scientific journals (Proceedings of the IEEE, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on Systems, Man, and Cybernetics, etc.), and international conferences (while member of the related Program Committee), such as Computer Vision and Pattern Recognition CVPR, European Conf. on Computer Vision ECCV, Int'l Conf. on Computer Vision ICCV, IAPR/IEEE Int. Conf. on Pattern Recognition ICPR, IEEE Int. Conf. on Image Processing ICIP, and many others.
- Director of the PhD school in Computer Science with international co-tutoring (Interlink 2002 Call for the internationalization of the research, MIUR), with specialization in computer vision, pattern recognition and image processing. The cooperating agreement includes the following partners:
 - 1) Institute of Robotics and Intelligent Systems (IRIS), University of Southern California, Los Angeles, USA;
 - 2) Department of Computer Science, Queen Mary and Westfield College, University of London, UK;
 - 3) Department of Electrical and Computer Engineering, Instituto Superior Tecnico, Lisbon, Portugal;
 - 4) Department of Computing and Electrical Engineering, Heriot Watt University, Edinburgh, UK.
- Promoter and responsible of the *Acceleratore di Ricerca Informatica Applicata (ARIA, Accelerator for Applied Informatics Research)*, bi-annual project (July 2003-2005) co-funded by Regione Veneto devoted to favor the collaboration between university and industry.
- Teaching activity for several graduate courses in the context of the laurea degree in Computer and Information Sciences (Informatica):
 - Computer Vision
 - Human-Computer Interaction and Multimedia
 - Image Processing
 - Pattern Recognition
- Member of the:

- Bio-Imaging and Signal Processing (BISP) Technical Committee, IEEE Signal Processing Society (2015-2018).
- Biomedical Image & Signal Analytics Special Area Team (BISA SAT), EURASIP European Association for Signal Processing (2015-2018).
- IEEE Senior Member, the Institute of Electrical and Electronics Engineers (since 2002).
- IAPR Fellow, International Association of Pattern Recognition (since 2006).
Italian representative of CVPL (Italian Branch of IAPR) in the IAPR Governing Board from 2016 to 2018.

EXPERTISE, RESEARCH INTERESTS & PROJECTS

Expertise & Research

- Expertise on computer vision and pattern recognition, machine learning, image and signal processing, and neuroimaging (data analysis).
- Main research focus lies now on deep learning, specifically on domain adaptation and generalization, multi-modal deep learning models, learning with privileged information, zero-one/shot learning, and disentangling representation models. Related applications involve classification and recognition in general, with preference on (fine-grained) activity recognition.
- Particular interest in multimodal social signal processing approaches for the analysis of human behavior, with main applications related to surveillance and security, human-human and human-machine interaction, ambient intelligence, and retailing. Also major experience in standard industrial applicative domains such as visual inspection and automation.
- Concerning the biomedical area, the main work and interest lie in neuroimaging data analysis, namely Magnetic Resonance Imaging and, in particular, in the study of neural correlates responsible of (social) behavior, with applications in behavioral neurological pathologies (e.g., schizophrenia, autism, etc.) and brain function understanding in general. We deal with these problems using a connectomics approach, specifically by integrating structural and functional connectomics data/information.
- Recent interest in the use of neuroimaging data in complex visual recognition tasks. In short, the driving idea is to exploit neuroimaging data (electroencephalography, EEG, at first instance) and visual data to improve the performance of deep learning models: the goal is to assess whether this type of information is useful to tackle difficult recognition tasks either when processed together with visual data, or when used as privileged data available only at training time but not at test time.
- Former experience in underwater vision (acoustical and optical), data fusion and sensory integration with applications on (underwater) object detection and recognition, object and scene reconstruction.
- Author/co-author of more than 400 papers in computer vision, pattern recognition, machine learning, image processing, and underwater acoustic imaging published in refereed international scientific journals or presented at the major conferences.
- H-number 52, by Google Scholar http://scholar.google.com/citations?user=yV3_PtKAAAAJ
H-number 40, by Scopus <https://www.scopus.com/authid/detail.uri?authorId=7006595496>

Team Management

- Director of PAVIS – *Pattern Analysis & Computer Vision*, Istituto Italiano di Tecnologia (IIT), Genova, 2009-now. Managing and supervising the activities of about 30 people in average (seniority: researchers, senior and junior postdocs, and PhD students).
More information on: <https://pavis.iit.it>
- Founder and responsible of VIPS – *Vision, Image Processing and Sound* laboratory, Dipartimento di Informatica, University of Verona, 1999-2009. About 20 people in average (assistant

professors, postdocs, and PhD students).

More information on: <http://vips.sci.univr.it>.

- Supervision and management of activities (research and project activities) of a small academic team inside the Signal Processing and Understanding group (SPUG) of DIBE (University of Genoa), with several engagements, 1992-1995.

Projects

Notable experience in technical supervision, coordination and management, and preparation of several research projects in the context of national and European programmes, as well as industrial projects directly funded by public and private organizations:

- Industry-funded project titled “Design, realization and test of an automatic visual inspection system for gas turbin combustion chambers”. Client: Ansaldo Energia S.p.A., 2018-2020 (2 years). Overall budget: 1357 k€. IIT-PAVIS budget: 911 k€.
- Industry-funded project titled “Visual Inspection of glasses for the automatic detection and classification of defects by Machine Learning”. Client: Luxottica S.p.A., 2018-2019 (2 years). Budget: 281 k€.
- Joint Laboratory titled “Digital Textile”. Client: Camozzi Group, 2018-2022 (5 years). Budget: 331 k€.
- Industry-funded project titled “Feasibility Study for the Visual Inspection and Assessment of Refractory Tiles in Turbin Combustion Chambers”. Client: Ansaldo Energia S.p.A., 2017 (1 year). Budget: 120 k€.
- Industry-funded project titled “Automatic Visual Inspection and Assemblies”. Client: GE AVIO S.r.l., 2014-2017 (3 years). Budget: 424 k€.
- European Commission (EC)–funded project RENVISION – Retina inspired ENcoding For Advanced VISION Tasks. Neuro-Bio Inspired System, Future & Emerging Technologies (FET) Proactive initiative, Information and Communication Technology (ICT), 7th Framework Programme, 2013-2016 (3 years). Overall cost: 2.907 M€ (2.213 M€ EU funding). IIT-PAVIS budget: 818 k€. **Project Coordinator**
- Industrial-funded project titled “Crowd behavior analysis”. Client: Selex Elsag S.p.A., 2012-2013 (1 year). Budget: 100 k€.
- EC–funded project SAMURAI – Suspicious and Abnormal behaviour Monitoring Using a netwoRk of cAmeras & sensors for sltuation awareness enhancement. SECURITY programme, 7th Framework Programme, 2008-2011 (3 years). Overall cost: 3.636 M€ (2.478 M€ EU funding). University of Verona’s budget: 451 k€. **Partner**
- EC–funded project SIMBAD – Beyond Features: Similarity-Based Pattern Analysis and Recognition. Future & Emerging Technology (FET) programme (Information and Communication Technology, ICT), 7th Framework Programme, 2008-2011 (3 years). Overall cost: 2.171 M€ (1.648 M€ EU funding). University of Verona’s budget: 369 k€. **Partner**
- National-funded project titled “Similarity-based Methods for Computer Vision and Pattern Recognition: Theory, Algorithms, Applications”. MUR (Ministry of University and Research), 2007-2009.
- EC–funded project ARROV – Augmented Reality for Remotely Operated Vehicles. Competitive Growth programme, 2001-2004. **Partner**
- National-funded project titled “LIMA3D, Low-Cost 3D Imaging and Modeling Automatic system”. MIUR (Ministry of Research and University), 2004-2005.
- National-funded project titled “Augmented Reality for Teleoperation of Free Flying Robots”. Italian Space Agency (ASI), 2000-2004.
- National-funded project titled “Spatial Data in Geographical Information Systems”. MIUR (Ministry of Research and University), 2001-2002.
- Scientific and technical preparation, coordination, and management of the EC-BRITE-EURAM 3 project VENICE (*Virtual ENvironment interface by sensory integration for Inspection and*

- manipulation Control in multifunctional underwater vehicles, no. BE-2013), 1996-1999. **Partner**
- Scientific and technical preparation of EC-MAST III project HOLOMAR (*High resolution in situ HOLOGraphic recording and analysis of MARine organisms and particles*), 1997. This project was finally funded by EC.
- Technical coordination and management of EC-MAST project MOBIUS (*Multisensor High Resolution Intelligent Marine Observation of Ocean Floor in Continental Shelves*, no. MAST-0028-C), 1990-1992. **Partner**
- Several minor industrial-funded projects.

SELECTED PUBLICATIONS

A complete list of publications can be retrieved on <http://dblp.uni-trier.de/pers/hd/m/Murino:Vittorio.html>

Journals

1. N.C. Garcia, P. Morerio, V. Murino, “Learning with privileged information via adversarial discriminative modality distillation”, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2019.
2. R. Panda, A. Bhuiyan, V. Murino, A.K. Roy-Chowdhury, “Adaptation of Person Re-identification Models for On-boarding New Camera(s)”, *Pattern Recognition*, Vol. 96, December 2019.
3. A. Zunino, J. Cavazza, P. Morerio, R. Volpi, A. Cavallo, C. Becchio, V. Murino, “Predicting Intentions from Motion: the Subject-Adversarial Adaptation Approach”, *International Journal on Computer Vision*, 2019. DOI: <https://doi.org/10.1007/s11263-019-01234-9>
4. C. Beyan, V-M. Katsageorgiou, V. Murino, “A Sequential Data Analysis Approach to Detect Emergent Leaders in Small Groups”, *IEEE Trans. on Multimedia*, 2019. DOI: 10.1109/TMM.2019.2895505
5. S. Aslani, M. Dayan, L. Storelli, M. Filippi, V. Murino, M.A. Rocca, D. Sona, “Multi-branch Convolutional Neural Network for Multiple Sclerosis Lesion Segmentation”, *Neuroimage*, Vol. 196, August 2019, pp. 1-15.
6. J. Cavazza, P. Morerio, V. Murino, “Scalable and Compact 3D Action Recognition with Approximated RBF Kernel Machines”, *Pattern Recognition*, Vol. 93, Sept. 2019, pp. 25-35.
7. C. Liu, W. Ding, J. Yang, V. Murino, B. Zhang, J. Han, G. Guo, “Aggregation Signature for Small Object Tracking”, *IEEE Transactions on Image Processing*, Vol. 29, Sept. 2019, pp. 1738 - 1747. DOI: 10.1109/TIP.2019.2940477
8. C. Beyan, A. Zunino, M. Shahid, V. Murino, “Personality Traits Classification Using Deep Visual Activity-based Nonverbal Features of Key-Dynamic Images”, *IEEE Trans. on Affective Computing*, 2019. DOI: 10.1109/TAFFC.2019.2944614
9. C. Beyan, F. Capozzi, C. Becchio, V. Murino, “Prediction of the Leadership Style of an Emergent Leader Using Audio and Visual Nonverbal Features”, *IEEE Trans. on Multimedia*, Vol. 20 No. 2, pp. 441-456, 2018.
10. A. Zunino, M. Crocco, S. Martelli, A. Trucco, V. Murino, “Audio Tracking in Noisy Environments by Acoustic Map and Spectral Signature”, *IEEE Trans. on Cybernetics*, Vol. 48, Issue 5, pp. 1619-1632, May 2018.
11. B. Zhang, A. Perina, Ce Li, Qixiang Le, V. Murino, A. Del Bue, “Manifold constraint transfer for visual structure-driven optimization”, *Pattern Recognition*, Vol. 77, pp. 87-98, May 2018.
12. S. Martelli, L. Mazzei, C. Canali, P. Guardiani, S. Giunta, A. Ghiazza, I. Mondino, F. Cannella, V. Murino, A. Del Bue, “Deep Endoscope: Intelligent Duct Inspection for the Avionic Industry”, *IEEE Trans. on Industrial Informatics*, Vol. 14, Issue 4, pp. 1701-1711, April 2018.
13. V-M. Katsageorgiou, D. Sona, M. Zanutto, G. Lassi, C. Garcia-Garcia, V. Tucci, V. Murino, “A Novel Unsupervised Analysis of Electrophysiological Signals Reveals New Sleep Sub-stages in Mice”, *PLOS Biology*, 16(5), May 2018. <https://doi.org/10.1371/journal.pbio.2003663>

14. M. San Biagio, C. Beltran-Gonzalez, S. Giunta, A. Del Bue, V. Murino, "Automatic Inspection of Aeronautics Components", *Machine Vision and Applications*, Vol. 28, No. 5-6, DOI 10.1007/s00138-017-0839-1, August 2017, pp. 591-605.
15. S. Bak, M. San Biagio, R. Kumar, V. Murino, F. Brémond, "Exploiting Feature Correlations by Brownian Statistics for People Detection and Recognition", *IEEE Transactions on Systems, Man and Cybernetics: Systems*, Vol. 47, Issue 9, Sept. 2017.
16. P. Lovato, M. Bicego, M. Kesa, N. Jovic, V. Murino, A. Perina, "Traveling on discrete embeddings of gene expression", *Artificial Intelligence in Medicine*, Vol. 70, June 2016, pp. 1-11.
17. M. Crocco, M. Cristani, A. Trucco, V. Murino, "Audio Surveillance: A Systematic Review", *ACM Computing Survey*, Vol. 48, Issue 4, March 2016.
18. B. Zhang, A. Perina, Z. Li, V. Murino, J. Liu, R. Ji, "Bounding Multiple Gaussians Uncertainty with Application to Object Tracking", *International Journal on Computer Vision*, Vol. 118, No. 3, pp. 364-379, July 2016. DOI: 10.1007/s11263-016-0880-y.
19. Minh Hà Quang, L. Bazzani, V. Murino, "A Unifying Framework in Vector-Valued Reproducing Kernel Hilbert Spaces for Manifold Regularization and Co-Regularized Multi-View Learning", *Journal of Machine Learning Research*, 17(25):1-72, 2016.
20. S. Vascon, E.Z. Mequanint, M. Cristani, H. Hung, M. Pelillo, V. Murino, "Detecting conversational groups in images and sequences: a robust game-theoretic approach", *Computer Vision and Image Understanding*, Vol. 143, pp. 11-24, Feb. 2016.
21. M. Tamassia, A. Farinelli, V. Murino, A. Del Bue, "Directional Visual Descriptors and Multirobot Strategies for Large-Scale Coverage Problems", *Journal of Field Robotics*, DOI: 10.1002/rob.21612, 2015.
22. S. Ullo, V. Murino, A. Maccione, L. Berdondini, D. Sona, "Bridging the Gap in Connectomic Studies: A Particle Filtering Framework for Estimating Structural Connectivity at Network Scale Medical Image Analysis", *Medical Image Analysis*, Vol. 21, No. 1, pp. 1-14, April 2015.
23. P. Salvagnini, F. Pernici, M. Cristani, G. Lisanti, A. Del Bimbo, V. Murino, "Non-Myopic Information Theoretic Sensor Management of a Single Pan-Tilt-Zoom Camera for Multiple Object Detection and Tracking", *Computer Vision and Image Understanding*, Vol. 134, pp. 74-88, May 2015.
24. L. Bazzani, M. Zanotto, M. Cristani, V. Murino, "Joint Individual-Group Modeling for Tracking", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol 37(4), pp. 746-759, April 2015.
25. L. Doderò, S. Vascon, V. Murino, A. Bifone, A. Gozzi, D. Sona, "Automated Multi-Subject Fiber Clustering of Mouse Brain using Dominant Sets", *Frontiers in Neuroinformatics* 8:87, Dec. 2014. DOI: 10.3389/fninf.2014.00087. *Online*
26. S. Ullo, T.R. Nieuws, D. Sona, A. Maccione, L. Berdondini, V. Murino, "Functional Connectivity Estimation over Large Networks at Cellular Resolution based on Electrophysiological Recordings and Structural Prior", *Frontiers in Neuroanatomy* 8:137, Nov. 2014. DOI: 10.3389/fnana.2014.00137. *Online*
27. M. San Biagio, S. Martelli, M. Crocco, M. Cristani, V. Murino "Encoding Structural Similarity By Cross-covariance Tensors For Image Classification", *International Journal of Pattern Recognition and Artificial Intelligence*, Vol. 28, Issue 7, November 2014.
28. A. Tavano, A. Pesarin, V. Murino, M. Cristani. "Automatic conversational scene analysis in children with Asperger syndrome/High Functioning Autism and typically developing peers", *PLoS ONE*, 2014. DOI: 10.1371/journal.pone.0085819.
29. D.S. Cheng, H. Salamin, P. Salvagnini, M. Cristani, A. Vinciarelli, V. Murino. "Predicting Online Lecture Ratings Based on Gesturing and Vocal Behavior", *Journal on Multimodal User Interfaces*, *Journal on Multimodal User Interfaces*, Vol. 8, Issue 2, pp. 151-160, June 2014.
30. F. Papaleo, M.L. Scattoni, L. Giancardo, D. Sona, H. Huang, S. Sannino, F. Managò, D. Scheggia, V. Murino, "Chronic and Acute Intranasal Oxytocin Produce Divergent Social Effects in Mice", *Neuropsychopharmacology*, 39(5), pp. 1102-14, April 2014.

31. A.C. Carli, M.A.T. Figueiredo, M. Bicego, V. Murino, "Generative embeddings based on Rician mixtures for kernel-based classification of magnetic resonance images.", *Neurocomputing*, Vol. 123, pp. 49-59, 2014.
32. L. Giancardo, D. Sona, H. Huang, S. Sannino, F. Managò, D. Scheggia, F. Papaleo, V. Murino, "Automatic Visual Tracking and Social Behaviour Analysis with Multiple Mice", *PLoS ONE* 8(9): e74557, Sept. 2013. doi:10.1371/journal.pone.0074557 2013.
33. D. Tosato, M. Spera, M. Cristani, V. Murino, "Characterizing humans on Riemannian manifolds", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 35(8), pp. 1972-1984, August 2013.
34. L. Bazzani, M. Cristani, V. Murino. "Symmetry-driven accumulation of local features for human characterization and re-identification". *Computer Vision and Image Understanding*, Vol. 117(2), pp. 130-144, February 2013.
35. M. Bicego, A. Ulas, U. Castellani, A. Perina, V. Murino, A.F.T. Martins, P.M.Q. Aguiar, M.A.T. Figueiredo, "Combining Information Theoretic Kernels with Generative Embeddings for Classification", *Neurocomputing*, Vol. 101, pp. 161-169, Feb. 2013.
36. M. Cristani, R. Raghavendra, A. Del Bue, V. Murino, "Human Behavior Analysis in Video Surveillance: a Social Signal Processing Perspective", *Neurocomputing*, Vol. 100, pp. 86-97, Jan. 2013.
37. A. Perina, N. Jojic, M. Cristani, V. Murino, "Stel Component Analysis: Joint Segmentation, Modeling and Recognition of Objects Classes", *International Journal of Computer Vision*, Vol. 100, No. 3, pp. 241-260, 2012.
38. A. Perina, M. Cristani, U. Castellani, V. Murino, N. Jojic, "Free energy score spaces: using generative information in discriminative classifiers", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 34, No. 7, pp. 1249-1262, July 2012.
39. M. Bicego, P. Lovato, A. Perina, M. Fasoli, M. Delledonne, M. Pezzotti, A. Polverari, V. Murino, "Investigating topic models' capabilities in expression microarray data classification", *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, vol. 9, no. 6, pp. 1831-1836, 2012.
40. A. Pesarin, M. Cristani, V. Murino, A. Vinciarelli, "Conversation Analysis at Work: Detection of Conflict in Competitive Discussions through Semi-Automatic Turn-Organization Analysis", *Cognitive Processing*, Volume 13, Issue 2 Supplement, pp 533-540, October 2012.
41. A. Sedda, V. Manfredi, G. Bottini, M. Cristani, V. Murino. Automatic human interaction understanding: lessons from a multidisciplinary approach. *Frontiers in Human Neuroscience*, 2012. Online.
42. M. Crocco, A. Del Bue, V. Murino, "A Bilinear Approach to the Position Self-Calibration of Multiple Sensors", *IEEE Transactions on Signal Processing*, Vol. 60, No. 2, pp. 660-673, Feb. 2012.
43. U. Castellani, M. Cristani, V. Murino, "Statistical 3D shape analysis by local generative descriptors", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 33 no. 12, Dec. 2011, pp. 2555-2560.
44. B. Torre, M. Lorenzoni, M. Bicego, M. Cristani, V. Murino, A. Diaspro, "PCA In Dynamic Force Spectroscopy", *Imaging & Microscopy*, 13(4), pp. 26-28, Nov. 2011.
45. M. Cristani, A. Pesarin, C. Drioli, A. Perina, A. Tavano, V. Murino, "Generative Modeling and Classification of Dialogs by a Low-level Turn-taking Feature", *Pattern Recognition*, Volume 44, Issue 8, August 2011, pp. 1785-1800.
46. A. Ulas, R.P.W. Duin, U. Castellani, M. Loog, P. Mirtuono, M. Bicego, V. Murino, M. Bellani, S. Cerruti, M. Tansella, P. Brambilla, "Dissimilarity-Based Detection of Schizophrenia", *International Journal of Imaging Systems & Technology*, Volume 21, Issue 2, June 2011, pp. 179-192.
47. R. Marzotto, P. Zoratti, D. Bagni, A. Colombari, V. Murino, "A real-time versatile roadway path extraction and tracking on an FPGA platform", *Computer Vision and Image Understanding*, Vol. 114, No. 11, Nov. 2010, pp. 1164-1179.
48. B. Torre, M. Bicego, M. Cristani, V. Murino, A. Diaspro, R. Cingolani, "Combination of Atomic Force Microscopy and Principal Component Analysis as a general method for direct recognition of functional and structural domains in nanocomposite materials", *Microscopy Research and Technique*, Vol. 73, Issue 10, Oct. 2010, pp. 973-981.

49. A. Perina, M. Cristani, V. Murino, "Learning natural scene categories by selective multi-level feature extraction", *Image and Vision Computing*, Vol. 28, Issue 6, June 2010, pp. 927-939.
50. U. Castellani, M. Cristani, C. Combi, V. Murino, A. Sbarbati, P. Marzola, "Visual MRI: Merging Information Visualization and non-parametric clustering techniques for MRI data set analysis", *Artificial Intelligence in Medicine*, Vol. 44, No. 3, November 2008, pp. 171-282.
51. U. Castellani, M. Cristani, S. Fantoni, V. Murino, "Interest points detection and matching by exploiting 3D mesh saliency in a Hidden Markov Model framework", *Computer Graphics Forum*, Vol. 29(2), 2008.
52. M. Cristani, M. Bicego, V. Murino, "Audio-Visual Event Recognition in Surveillance Video Sequences", *IEEE Transactions on Multimedia*, Vol. 9, No. 2, Feb. 2007, pp. 257-267.
53. M. Bicego, M. Cristani, V. Murino, "Unsupervised Scene Analysis: A Hidden Markov Model Approach", *Computer Vision and Image Understanding*, Vol. 102/1, pp. 22-41, April 2006.
54. A. Fusiello, V. Murino, "Augmented Scene Modeling and Visualization by Optical and Acoustic Sensor Integration", *IEEE Transactions on Visualization and Computer Graphics*, Vol. 10, No. 6, 2004, pp. 625-636.
55. M. Bicego, V. Murino, "Investigating Hidden Markov Models' Capabilities in 2D Shape Classification", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 26, No. 3, Feb. 2004, pp. 281-286.
56. M. Bicego, V. Murino, M.A.T. Figueiredo, "Similarity-based classification of sequences using Hidden Markov Models", *Pattern Recognition*, Vol. 37, No. 12, Dec. 2004, pp 2281-2291.
57. U. Castellani, A. Fusiello, V. Murino, "Registration of multiple acoustic range views for underwater scene reconstruction", *Computer Vision and Image Understanding*, Vol. 87, no. 3, 2002, pp. 78-89.
58. V. Murino, A. Trucco, "Three-Dimensional Image Generation and Processing in Underwater Acoustic Vision", *Proceedings of the IEEE*, Vol. 88, No. 12, Dec. 2000, pp. 1903-1946.

Books/Edited Books

1. *Multimodal Scene Understanding. Algorithms, Applications and Deep Learning*. M.Y. Yang, B. Rosenhahn, V. Murino (Eds.), Academic Press, 525 pages, Paperback ISBN: 9780128173589, 2019.
2. *Covariances in Computer Vision and Machine Learning*, by Minh Hà Quang and Vittorio Murino, Synthesis Lectures on Computer Vision, Morgan & Claypool, 2017.
3. *Algorithmic Advances in Riemannian Geometry and Applications. For Machine Learning, Computer Vision, Statistics, and Optimization*. Minh Hà Quang and Vittorio Murino (Eds.), ISBN: 978-3-319-45025-4 (Print), 978-3-319-45026-1 (Online). Springer, 2016.
<http://link.springer.com/book/10.1007/978-3-319-45026-1>
4. *Group and Crowd Behavior for Computer Vision*. Vittorio Murino, Marco Cristani, Shishir Shah, and Silvio Savarese Eds., eBook ISBN: 9780128092804, Hardcover ISBN: 97801280927672017, Academic Press, 2017.

Conferences/Workshops/Contributions on books

1. A. Perez, V. Sanguineti, P. Morerio, V. Murino, "Audio-Visual Model Distillation Using Acoustic Images", *IEEE Winter Conference on Applications of Computer Vision WACV 2020*.
2. R. Volpi, P. Morerio, R. Ragonesi, V. Murino, "Generative Pseudo-label Refinement for Unsupervised Domain Adaptation", *IEEE Winter Conference on Applications of Computer Vision WACV 2020*.
3. R. Volpi, V. Murino, "Model Vulnerability to Distributional Shifts over Image Transformation Sets", *Int'l Conf. on Computer Vision ICCV 2019*, Seoul, Korea, Oct. 2019.
4. S.A. Bargal, A. Zunino, V. Petsiuk, J. Zhang, K. Saenko, V. Murino, S. Sclaroff, "Guided Zoom: Questioning Network Evidence for Fine-Grained Classification", *British Machine Vision Conference BMVC 2019*, Cardiff, UK, Sept. 2019. [Oral, < 5% acceptance rate](#)

5. N.C. Garcia, P. Morerio, V. Murino, "Cross-modal Learning by Hallucinating Missing Modalities in RGB-D", in *Multimodal Scene Understanding. Algorithms, Applications and Deep Learning*, M.Y. Yang, B. Rosenhahn, V. Murino (Eds.), Academic Press, pp. 383-402, Paperback ISBN: 9780128173589, 2019.
6. X. Zhu, P. Morerio, V. Murino, "Unsupervised Domain-Adaptive Person Re-identification Based on Attributes", *26th IEEE Int'l Conf. on Image Processing ICIP 2019*, Taiwan, Sept. 2019.
7. M.A. Yamin, M. Dayan, L. Squarcina, P. Brambilla, V. Murino, V. Diwadkar, D. Sona, "Comparison of Brain Connectomes Using Geodesic Distance on Manifold: A Twins Study", *IEEE Int'l Symposium on Biomedical Imaging ISBI 2019*, Venice, Italy, April 2019.
8. N.C. Garcia, P. Morerio, V. Murino, "Cross-modal Learning by Hallucinating Missing Modalities in RGB-D", in *Multimodal Scene Understanding. Algorithms, Applications and Deep Learning*, M.Y. Yang, B. Rosenhahn, V. Murino (Eds.), Academic Press, pp. 383-402, Paperback ISBN: 9780128173589, 2019.
9. R. Volpi, H. Namkoong, O. Sener, J. Duchi, V. Murino, S. Savarese, "Generalizing to Unseen Domains via Adversarial Data Augmentation", *Neural Information Processing Systems NeurIPS 2018*, Montréal, Canada, December 2018.
10. N. Garcia, P. Morerio, V. Murino. "Modality Distillation with Multiple Stream Networks for Action Recognition", *European Conf. on Computer Vision ECCV 2018*, Munich, Sept. 2018.
11. A. Roy, J. Cavazza, V. Murino, "Visually Augmented Semantic Attributes for Zero-Shot Learning", *British Machine Vision Conference BMVC 2018*, Newcastle Upon Tyne, UK, Sept. 2018.
12. S.A. Bargal, A. Zunino, D. Kim, J. Zhang, V. Murino, S. Sclaroff, "Excitation Backprop for RNNs", *31st IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2018*, Salt Lake City, USA, June 2018.
13. R. Volpi, P. Morerio, S. Savarese, V. Murino, "Adversarial Feature Augmentation for Unsupervised Domain Adaptation", *31st IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2018*, Salt Lake City, USA, June 2018.
14. P. Morerio, J. Cavazza, V. Murino, "Minimal-Entropy Correlation Alignment for Unsupervised Deep Domain Adaptation", *Int'l. Conf. on Representation Learning ICLR 2018*, Vancouver, 2018. [Top 11% of the accepted papers based on the review scores](#)
15. C. Beyan, M. Shahid, V. Murino, "Investigation of Small Group Social Interactions Using Deep Visual Activity-Based Nonverbal Features", *ACM Multimedia 2018*, Seoul, South Korea, Oct. 2018.
16. A. Roy, B. Banerjee, V. Murino, "Discriminative Latent Visual Space For Zero-Shot Object Classification", *24th Int'l Conf. on Pattern Recognition ICPR 2018*, Beijing, China, August 2018.
17. M. Dayan, V-M. Katsageorgiou, L. Doderio, V. Murino, D. Sona, "Unsupervised Detection of White Matter Fiber Bundles with Stochastic Neural Networks", *Int'l Conf. on Image Processing ICIP 2018*, Athens, Greece, Oct. 2018.
18. V. Murino, M. Cristani, S. Shah, S. Savarese, "The Group and Crowd Interdisciplinary Challenge", in *Group and Crowd Behavior for Computer Vision*, V. Murino, M. Cristani, S. Shah, S. Savarese (Eds.), Academic Press, pp. 1-11, 2017. [Book chapter](#)
19. P. Morerio, J. Cavazza, R. Volpi, R. Vidal, V. Murino, "Curriculum Dropout", *Int'l Conf. on Computer Vision ICCV 2017*, Venice, Oct. 2017.
20. A. Perina, S. Mohammadi, N. Jovic, V. Murino, "Summarization and Classification of Wearable Camera Streams by Learning the Distributions Over Deep Features of Out-Of-Sample Image Sequences", *Int'l Conf. on Computer Vision ICCV 2017*, Venice, Oct. 2017.
21. R. Panda, A. Bhuiyan, V. Murino, A.K. Roy-Chowdhury, "Unsupervised Adaptive Re-Identification in Open World Dynamic Camera Networks", *30th IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2017*, Honolulu, USA, July 2017.
22. B. Banerjee, V. Murino, "Efficient Pooling of Image Based CNN Features for Action Recognition in Videos", *Int'l Conf. on Audio, Speech and Signal Processing ICASSP 2017*, New Orleans, USA, March 2017.
23. B. Mirmahboub, M.L. Mekhalfi, V. Murino "Distance Penalization and Fusion for Person Re-identification", *Winter Conf. on Applications of Computer Vision WACV 2017*, Santa Rosa, CA, USA, March 2017.

24. A. Crimi, L. Dodero, V. Murino, D. Sona, "Case-Control Discrimination through Effective Brain Connectivity", *Int'l Symposium on Biomedical Imaging ISBI 2017*, Melbourne, Australia, April 2017.
25. V.M. Katsageorgiou, M. Zanotto, V. Tucci, V. Murino, D. Sona, "Data-driven Study of Mouse Sleep-stages using Restricted Boltzmann Machines", *Int'l Joint Conf. on Neural Networks IJCNN 2017*, Anchorage, May 2017.
26. C. Beyan, V-M. Katsageorgiou, V. Murino, "Moving as a Leader: Detecting Emergent Leadership in Small Groups using Body Pose", *25th ACM Multimedia 2017 Conference*, Mountain View, CA, Oct. 2017.
27. A. Zunino, J. Cavazza, A. Koul, A. Cavallo, C. Becchio, V. Murino, "Predicting Human Intentions from Motion Cues Only: A 2D+3D Fusion Approach", *25th ACM Multimedia 2017 Conference*, Mountain View, CA, Oct. 2017.
28. C. Beyan, F. Capozzi, C. Becchio, V. Murino, "Multi-task Learning of Social Psychology Assessments and Nonverbal Features for Automatic Leadership Identification", *19th Int'l Conf. Multimodal Interaction ICMI 2017*, Glasgow, Nov. 2017.
29. Xiangping Zhu, A. Bhuiyan, M.L. Mekhalfi, V. Murino, "Exploiting Gaussian Mixture Importance for Person Re-identification", *14th Int'l Conf. on Advanced Video and Signal based Surveillance AVSS 2017*, Lecce, Sept. 2017.
30. C. Beyan, N. Carissimi, F. Capozzi, S. Vascon, M. Bustreo, A. Pierro, C. Becchio, V. Murino, "Detecting emergent leader in a meeting environment using nonverbal visual features only", *18th ACM Int'l Conf. on Multimodal Interaction ICMI 2016*, Tokyo, Japan, Nov. 2016.
31. E. Muñoz, Y. Konishi, V. Murino, A. Del Bue, "Fast 6D Pose from a Single RGB Image using Cascaded Forest Template", *IEEE Int'l Conf. on Intelligent Robots and Systems IROS 2016*, Daejeon, Korea, Oct. 2016.
32. S. Mohammadi, A. Perina, H. Kiani, V. Murino, "Angry Crowds: Detecting Violent Events in Videos", *European Conf. on Computer Vision ECCV 2016*, Amsterdam, The Netherlands, Oct. 2016.
33. J. Cavazza, A. Zunino, M. San Biagio, V. Murino, "Kernelized Covariance for Action Recognition", *23rd Int'l Conf. on Pattern Recognition ICPR 2016*, Cancun, Mexico, Dec. 2016.
34. V. Katsageorgiou, M. Zanotto, H. Huang, V. Ferretti, F. Papaleo, D. Sona, V. Murino, "Unsupervised Mouse Behavior Analysis: A Data-driven Study of Mice Interactions", *23rd Int'l Conf. on Pattern Recognition ICPR 2016*, Cancun, Mexico, Dec. 2016.
35. L. Dodero, D. Sona, D.E. Meskaldji, V. Murino, D. Van De Ville, "Traces of Human Functional Activity: Moment-To-Moment Fluctuations In fMRI Data", *2016 Int'l Symposium on Biomedical Imaging ISBI'16*, Prague, April 2016, pp. 1307-1310.
36. E. Muñoz, Y. Konishi, V. Murino, A. Del Bue, "Fast 6D Pose Estimation for Texture-less Objects from a single RGB image", *Int'l Conf. on Robotics and Automation ICRA 2016*, Stockholm, Sweden, May 2016.
37. Minh Hà Quang, M. San Biagio, L. Bazzani, V. Murino, "Approximate Log-Hilbert-Schmidt distances between covariance operators for image classification", *29th IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2016*, Las Vegas, USA, June 2016.
38. Hà Quang Minh, Vittorio Murino, "From Covariance Matrices to Covariance Operators: Data Representation from Finite to Infinite-Dimensional Settings", in *Algorithmic Advances in Riemannian Geometry and Applications: For Machine Learning, Computer Vision, Statistics, and Optimization*, Minh Hà Quang, V. Murino Eds., Springer, pp. 115-143, 2016. [Book chapter](#)
39. A. Crimi, L. Dodero, V. Murino, D. Sona, "Effective Brain Connectivity Through a Constrained Autoregressive Model", in *LNCS 9902, Medical Image Computing and Computer Assisted Intervention – MICCAI 2016*, S. Ourselin, L. Joskowicz, M.R. Sabuncu, G. Unal, W. Wells Eds., Springer, October 2016.
40. H. Mousavi, H.K. Galoogahi, A. Perina, V. Murino, "Detecting Abnormal Behavioral Patterns in Crowd Scenarios", in *Toward Robotic Socially Believable Behaving Systems: Modeling Social Signals*, Vol. II, A. Esposito & L. Jain Eds., Intelligent Systems Reference Library (ISRL) Springer Series, 2016. [Book chapter](#)

41. S. Mohammadi, H.K. Galoogahi, A. Perina, V. Murino, "Violence Detection in Crowded Scenes using Substantial Derivative", *12th IEEE Int'l Conf. on Advanced Video and Signal Based Surveillance AVSS 2015*, Karlsruhe, Germany, August 2015.
42. S. Martelli, M. San Biagio, V. Murino, "Latent subcategory models for pedestrian detection with partial occlusion handling", *12th IEEE Int'l Conf. on Advanced Video and Signal Based Surveillance AVSS 2015*, Karlsruhe, Germany, August 2015.
43. A. Zunino, M. Crocco, S. Martelli, A. Trucco, A. Del Bue, V. Murino, "Seeing the Sound: a New Multimodal Imaging Device for Computer Vision", *Workshop on 3D Reconstruction and Understanding with Video and Sound (IEEE ICCV 2015 satellite workshop)*, Santiago de Chile, Dec. 2015.
44. L. Dodero, M. Ha Quang M., M. San Biagio, V. Murino, D. Sona, "Kernel-based classification for brain connectivity graphs on the Riemannian manifold of positive definite matrices", *12nd IEEE Int'l Symposium on Biomedical Imaging ISBI 2015*, New York, USA, April 2015.
45. A. Bhuiyan, A. Perina, V. Murino, "Exploiting Multiple Detections to Learn Robust Brightness Transfer Functions in Re-Identification Systems", *Int'l Conf. on Image Processing ICIP 2015*, Quebec City, Canada, Sept. 2016. [Top 10% best paper](#)
46. D. Stamos, S. Martelli, M. Nabi, A. McDonald, V. Murino, M. Pontil, "Learning With Dataset Bias in Latent Subcategory Models", *28th IEEE Conference on Computer Vision and Pattern Recognition CVPR 2015*, Boston, USA, June 2015, pp. 3650-3658.
47. B. Zhang, A. Perina, V. Murino, A. Del Bue, "Sparse Representation Classification with Manifold Constraints Transfer", *28th IEEE Conference on Computer Vision and Pattern Recognition CVPR 2015*, Boston, USA, June 2015, pp. 4557-4565.
48. H. Mousavi, S. Mohammadi, A. Perina, R. Chellali, V. Murino, "Analyzing Tracklets for the Detection of Abnormal Crowd Behavior", *IEEE Workshop on Applications of Computer Vision WACV 2015*, Jan. 2015.
49. B. Zhang, Z. Li, A. Perina, A. Del Bue, V. Murino, "Adaptive Local Movement Modelling for Object Tracking", *IEEE Workshop on Applications of Computer Vision WACV 2015*, Jan. 2015.
50. S. Vascon, E. Zemene, M. Cristani, H. Hung, M. Pelillo, V. Murino, "A Game-Theoretic Probabilistic Approach for Detecting Conversational Groups", *12th Asian Conf. on Computer Vision ACCV'14*, Singapore, November 2014. [Oral, < 4% acceptance rate](#)
51. M. Cristani, V. Murino, "Socially-Driven Computer Vision for Group Behavior Analysis", In *Registration and Recognition in Images and Videos, Studies in Computational Intelligence*, R. Cipolla, S. Battiato, G.M. Farinella (Eds.), Springer, Volume 532, 2014, pp. 223-256. [Book chapter](#)
52. Minh Hà Quang, M. San Biagio, V. Murino, "Log-Hilbert-Schmidt metric between positive definite operators on Hilbert spaces", *Neural Information Processing Systems NIPS 2014*, Montreal, Canada, December 2014. [Spotlight, 3.6% acceptance rate](#)
53. M. Tamassia, A. Farinelli, V. Murino, A. Del Bue, "A Directional Visual Descriptor for Large-Scale Coverage Problems", *IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2014*, Chicago, Sept. 2014.
54. A. Perina, M. Zanotto, B. Zhang, V. Murino, "Location Recognition of Lifelog Images through a combination of Generative Models", *25th British Machine Vision Conference BMVC 2014*, Nottingham, UK, Aug. 2014.
55. L. Dodero, A. Gozzi, A. Liska, V. Murino, D. Sona, "Group-Wise Functional Community Detection through Joint Laplacian Diagonalization", *Medical Image Computing and Computer-Assisted Intervention MICCAI 2014*, Boston, Sept. 2014.
56. A. Perina, D. Peruzzo, M. Kesa, N. Jovic, V. Murino, M. Bellani, P. Brambilla, U. Castellani, "Exploiting Feature Embedding for Brain Analysis in Schizophrenia", *Medical Image Computing and Computer-Assisted Intervention MICCAI 2014*, Boston, Sept. 2014.
57. M. San Biagio, M. Crocco, M. Cristani, S. Martelli, V. Murino, "Heterogeneous Auto-Similarities of Characteristics (HASC): Exploiting Relational Information for Classification", *Int'l Conf. on Computer Vision ICCV 2013*, Sydney, Australia, Dec. 2013.

58. D. Figueira, L. Bazzani, H.Q. Minh, M. Cristani, A. Bernardino, V. Murino. "Semi-supervised multi-feature learning for person re-identification", *Int'l Conf. on Advanced Video and Signal-based Surveillance AVSS 2013*, Krakov, Poland, Sept. 2013.
59. P. Salvagnini, L. Bazzani, M. Cristani, V. Murino. "Person re-identification with a PTZ camera: an introductory study", *Int'l Conf. on Image Processing ICIP 2013*, Melbourne, Australia, Sept. 2013.
60. H.Q. Minh, L. Bazzani, V. Murino, "A unifying framework for vector-valued manifold regularization and multi-view learning", *Int'l Conf. on Machine Learning ICML 2013*, Atlanta, USA, pp. 100-108, June 2013.
61. S. Ullo, U. Castellani, D. Sona, A. Del Bue, A. Maccione, L. Berdondini, V. Murino, "Neuronal Network Structural Connectivity Estimation by Probabilistic Features and Graph Heat Kernels", *Int'l Symp. on Biomedical Imaging ISBI 2013*, San Francisco, CA, April 2013.
62. L. Bazzani, M. Cristani, V. Murino, "SDALF: Modeling Human Appearance with Symmetry-Driven Accumulation of Features", In *Person Re-Identification*, S. Gong, M. Cristani, S. Yan, C.C. Loy (Eds.), Springer, 2013. [Book chapter](#)
63. R. Raghavendra, M. Cristani, A. Del Bue, E. Sangineto, V. Murino, "Anomaly detection in crowded scenes: a novel framework based on Swarm Optimization and Social Force Modeling", In *Modeling, Simulation and Visual Analysis of Large Crowds*, S. Ali, K. Nishino, D. Manocha, and M. Shah (Eds.), Springer, 2013. [Book chapter](#)
64. L. Bazzani, M. Cristani, G. Pagetti, D. Tosato, G. Menegaz, and V. Murino, "Analyzing groups: a social signaling perspective", In *Video Analytics for Business Intelligence, Studies in Computational Intelligence*. Shan, C.; Porikli, F.; Xiang, T.; Gong, S. (Eds.), Springer, 2012. [Book chapter](#)
65. L. Bazzani, M. Cristani, V. Murino. Decentralized Particle Filter for Joint Individual-Group Tracking. *IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2012*, Providence, RI, USA, June 2012.
66. M. Hà Quang, M. Cristani, A. Perina, V. Murino, "A regularized spectral algorithm for Hidden Markov Models with applications in computer vision", *IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2012*, Providence, RI, USA, June 2012.
67. E. Sangineto, M. Cristani, A. Del Bue, V. Murino, "Learning Discriminative Spatial Relations for Detector Dictionaries: an Application to Pedestrian Detection", *European Conf. on Computer Vision ECCV 2012*, Florence, Italy, Oct. 2012.
68. M. Zanotto, L. Bazzani, M. Cristani, V. Murino, "Online Bayesian Nonparametrics for Group Detection", *23rd British Machine Vision Conference BMVC 2012*, Guildford, UK, pp. xxx, 2012.
69. M. Crocco, A. Del Bue, M. Bustreo, V. Murino, "A Closed Form Solution to the Microphone Position Self-Calibration Problem," *37th International Conference on Acoustics, Speech, and Signal Processing ICASSP 2012*, Kyoto, Japan, March 2012.
70. M. Cristani, G. Roffo, C. Segalin, L. Bazzani, A. Vinciarelli, V. Murino, "Con conversationally-inspired Stylometric Features for Authorship Attribution in Instant Messaging", *ACM Multimedia 2012*, Nara, Japan, 2012.
71. M. San Biagio, M. Crocco, M. Cristani, S. Martelli, V. Murino, "Low-level Multimodal Integration on Riemannian Manifolds for Automatic Pedestrian Detection", *15th International Conference on Information Fusion FUSION 2012*, Singapore, July 2012.
72. S. Ullo, A. Del Bue, A. Maccione, L. Berdondini, V. Murino, "A Joint Structural and Functional Analysis of In-Vitro Neuronal Networks", *IEEE Int'l Conf. on Image Processing ICIP 2012*, Orlando, USA, Sept. 2012.
73. R. Sabzevari, A. Del Bue, V. Murino, "Multi-view Photometric Stereo using Semi-isometric Mappings", *3DimPVT 2012*, Zürich, Switzerland, 2012.
74. S. Martelli, M. Cristani, V. Murino, "Stereo-Based Framework for Pedestrian Detection with Partial Occlusion Handling", *9th IEEE Int'l Conf. on Advanced Video and Signal-based Surveillance AVSS 2012*, Beijing, China, 2012.

75. L. Giancardo, D. Sona, A. Gozzi, A. Bifone, V. Murino, S. Migliarini, G. Pacini, B. Pelosi, M. Pasqualetti, "Automatic Tractography Analysis through Sparse Networks in Case-Control Studies", *2nd Int'l Wks. on Pattern Recognition in NeuroImaging PRNI 2012*, London, UK.
76. L. Giancardo, D. Sona, D. Scheggia, F. Papaleo, V. Murino, "Segmentation and Tracking of Multiple Interacting Mice by Temperature and Shape Information", *21st Int'l Conf. on Pattern Recognition ICPR 2012*, Tsukuba Science City, Japan, 2012.
77. M. Cristani, L. Bazzani, G. Paggetti, A. Fossati, D. Tosato, A. Del Bue, G. Menegaz, V. Murino, "Social interaction discovery by statistical analysis of F-formations", *22nd British Machine Vision Conference BMVC 2011*, Dundee, UK, Aug. 2011.
78. D.S. Cheng, M. Cristani, M. Stoppa, L. Bazzani, V. Murino, "Custom Pictorial Structures for Re-identification", *22nd British Machine Vision Conference BMVC 2011*, Dundee, UK, Aug. 2011.
79. U. Castellani, P. Mirtuono, V. Murino, M. Bellani, G. Rambaldelli, M. Tansella, P. Brambilla, "A New Shape Diffusion Descriptor For Brain Classification", in *Lecture Notes in Computer Science 6892 (Medical Image Computing and Computer-Assisted Intervention MICCAI 2011)*, pp. 426-433, Toronto, Sept. 2011.
80. L. Bazzani, N. de Freitas, H. Larochelle, V. Murino, J-A Ting, "Learning attentional policies for object tracking and recognition in video with deep networks", In *International Conference on Machine Learning ICML 2011*, Bellevue, Washington, USA, 2011.
81. N. Jojic, A. Perina, V. Murino, "Structural Epitome: A way to summarize one's visual experience", *Neural Information Processing Systems NIPS 2010*, Vancouver, Canada, Dec. 2010.
82. M. Cristani, A. Pesarin, C. Drioli, A. Rodà, M. Grapulin, V. Murino, N. Sebe. "Toward an Automatically Generated Soundtrack from Low-level Cross-modal Correlations for Automotive Scenarios", *ACM Multimedia conference 2010*, Florence, Oct. 2010. [Full paper](#)
83. D. Tosato, M. Farenzena, M. Cristani, V. Murino "Part-based human detection on Riemannian manifolds", *IEEE Int'l Conf. on Image Processing ICIP 2010*, Hong Kong, Sept. 2010.
84. A. Perina, N. Jojic, U. Castellani, M. Cristani, V. Murino, "Object Recognition with Hierarchical Stel Models", *11th European Conf. on Computer Vision ECCV 2010*, Hersonissos (Heraklion), Crete, Greece, Sept. 2010. [Oral presentation \(3,2% acceptance rate for orals\)](#)
85. D. Tosato, M. Farenzena, M. Spera, V. Murino, M. Cristani, "Multi-class Classification on Riemannian Manifolds for Video Surveillance", *11th European Conf. on Computer Vision ECCV 2010*, Hersonissos (Heraklion), Crete, Greece, Sept. 2010. [Oral presentation \(3,2% acceptance rate for orals\)](#)
86. S. Martelli, D. Tosato, M. Farenzena, M. Cristani, V. Murino, "An FPGA-based Classification Architecture on Riemannian Manifolds", *DEXA Workshop on Interactive Multimodal Pattern Recognition in Embedded Systems*, Bilbao, Sept. 2010. [Best conference paper](#)
87. L. Bazzani, M. Cristani, M. Farenzena, A. Perina, V. Murino, "Multiple-shot person re-identification by HPE signature", *Int'l Conf. on Pattern Recognition ICPR 2010*, Istanbul, Turkey, August 2010. [IBM Best Student Paper Award \(Track: Computer Vision\)](#)
88. M. Farenzena, L. Bazzani, A. Perina, M. Cristani, V. Murino, "Person re-identification by symmetry-driven accumulation of local features", *IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2010*, San Francisco, USA, June 2010.
89. A. Perina, M. Cristani, V. Murino, N. Jojic, "Free energy score space", *Neural Information Processing Systems NIPS 2009*, Vancouver, Canada, Dec. 2009.
90. A. Perina, M. Cristani, U. Castellani, V. Murino, N. Jojic, "A hybrid generative/discriminative classification framework based on free-energy terms", *Int'l Conf. on Computer Vision ICCV 2009*, Kyoto, Japan, Oct. 2009.
91. N. Jojic, A. Perina, M. Cristani, V. Murino, B. Frey, "Stel component analysis: Modeling spatial correlations in image class structure", *IEEE Computer Vision and Pattern Recognition CVPR 2009*, Miami, FL, USA, June 2009.
92. M. Cristani, A. Perina, U. Castellani, V. Murino, "Geo-located image analysis using latent representations", *IEEE Computer Vision and Pattern Recognition CVPR 2008*, Anchorage, Alaska, USA.

93. M. Figueiredo, D.S. Cheng, V. Murino, "Clustering under prior knowledge with application to image segmentation", *Neural Information Processing Systems NIPS 2006*, Vancouver, Canada, December 2006.

June 2020

Vittorio Murino