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PUBLICATIONS AND PATENTS

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INTERNATIONAL JOURNALS

1. M. Chessa and F. Solari (2018) *A Computational Model for the Neural Representation and Estimation of the Binocular Vector Disparity from Convergent Stereo Image Pairs*. International Journal of Neural Systems, in press.
2. A. Canessa, A. Gibaldi, M. Chessa, M. Fato, F. Solari, and S.P. Sabatini. (2017). *A dataset of stereoscopic images and ground-truth disparity mimicking human fixations in peripersonal space*. Scientific Data, 4
3. M. Chessa, G. Maiello, A. Borsari, PJ Bex (2016) *The Perceptual Quality of the Oculus Rift for Immersive Virtual Reality*. Human Computer Interaction, pp. 1-32
4. M. Chessa, G. Maiello, PJ Bex, F. Solari (2016) *A space-variant model for motion interpretation across the visual field*. Journal of Vision, Vol.16, 12.
5. M. Chessa, N. Noceti, F. Odone, F. Solari, J. Sosa-García, L. Zini (2016) *An integrated artificial vision framework for assisting visually impaired users*. Computer Vision and Image Understanding, 149, pp. 209-228.
6. G. Maiello, M Chessa, F Solari, PJ Bex (2015) *The (In) Effectiveness of Simulated Blur for Depth Perception in Naturalistic Images*. PloS one, 10(10), e0140230.
7. M. Chessa, S.P. Sabatini, F. Solari (2015) *A systematic analysis of a VI-MT neural model for motion estimation* Neurocomputing, in press. <http://dx.doi.org/10.1016/j.neucom.2015.08.091>.
8. F. Solari, M. Chessa, N.V. K. Medathati, P. Kornprobst (2015) *What can we expect from a VI-MT feedforward architecture for optical flow estimation?* Signal Processing: Image Communication, 39 part B, pp. 342-354.
9. G. Maiello, M. Chessa, F. Solari, P. J Bex (2014) *Simulated disparity and peripheral blur interact during binocular fusion*. Journal of Vision, July 17, 2014, 14(8)13.
10. M. Chessa and G. Pasquale (2014) *Graphics processing unit-accelerated techniques for bio-inspired computation in the primary visual cortex*. Concurrency and Computation: Practice and Experience, 26(10), pp. 1799-1818.
11. M. Antonelli, A. Gibaldi, F. Beuth, A. J Duran, A. Canessa, M. Chessa, F. Solari, F. Hamker, E. Chinellato, S.P. Sabatini (2014) *A hierarchical system for a distributed representation of the peripersonal space of a humanoid robot*. IEEE Trans. Auton. Mental Develop, 6(4), pp.259-273.
12. F. Solari, M. Chessa, S.P. Sabatini. (2014) *An integrated neuromimetic architecture for direct motion interpretation in the log-polar domain*. Computer Vision and Image Understanding, 125, pp. 37-54.
13. E. Martinez-Martin, A.P. Del Pobil, M. Chessa, F. Solari, S.P. Sabatini (2014) *An active system for visually-guided reaching in 3D across binocular fixations*. The Scientific World Journal, 2014, art. no. 179391.
14. A. Canessa, M. Chessa, A. Gibaldi, S.P. Sabatini, F. Solari (2014) *Calibrated depth and color cameras for accurate 3D interaction in a stereoscopic augmented reality environment*. Journal of Visual

- Communication and Image Representation 25(1), pp. 227-237.
15. M. Chessa, F. Solari, S.P. Sabatini (2013) *Adjustable Linear Models for Optic Flow based Obstacle Avoidance*. Computer Vision and Image Understanding 117(6), pp. 603-619.
 16. F. Solari, M. Chessa, M. Garibotti, S.P. Sabatini. (2013) *Natural perception in dynamic stereoscopic augmented reality environments*. Display 34(2), pp. 142-152.
 17. M. Chessa, V. Bianchi, M. Zampetti, S. P. Sabatini, F. Solari (2012) *Real-time simulation of large-scale neural architectures for visual features computation based on GPU*. Network: Computation in Neural Systems 23(4), pp. 272-291.
 18. F. Solari, M. Chessa, S.P. Sabatini. (2012) *Design strategies for direct multi-scale and multi-orientation feature extraction in the log-polar domain*. Pattern Recognition Letters 33(1), pp. 41-51.
 19. A. Gibaldi, M. Chessa, A. Canessa, S.P. Sabatini, F. Solari. (2010) *A cortical model for binocular vergence control without explicit calculation of disparity*. Neurocomputing 73, pp. 1065-1073.

PROCEEDINGS OF PEER-REVIEWED INTERNATIONAL CONFERENCE

1. C. Bassano, F. Solari, M. Chessa (2018). *Studying natural human-computer interaction in immersive virtual reality: A comparison between actions in the peripersonal and in the near-action space*. VISIGRAPP 2018 - Proceedings of the 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications 2, pp. 108-115
2. C. Martini, N. Noceti, M. Chessa, A. Barla, A. Cella, G.A. Rollandi, A. Pilotto, A. Verri, F. Odone (2018) *A visual computing approach for estimating the motility index in the frail elder*. VISIGRAPP 2018 - Proceedings of the 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications 5, pp. 439-445
3. M. Chessa, & F. Solari (2017). [POSTER] *Walking in Augmented Reality: An Experimental Evaluation by Playing with a Virtual Hopscotch*. In Mixed and Augmented Reality (ISMAR-Adjunct), 2017 IEEE International Symposium on (pp. 143-148).
4. E. Gusai, C. Bassano, F. Solari, & M. Chessa (2017). *Interaction in an Immersive Collaborative Virtual Reality Environment: A Comparison Between Leap Motion and HTC Controllers*. In International Conference on Image Analysis and Processing (pp. 290-300). Springer, Cham.
5. A.E. Martis, C. Bassano, F. Solari, & M. Chessa (2017). *Going to a Virtual Supermarket: Comparison of Different Techniques for Interacting in a Serious Game for the Assessment of the Cognitive Status*. In International Conference on Image Analysis and Processing (pp. 281-289). Springer, Cham.
6. N.K. Medathati, M. Chessa, G.S. Masson, P. Kornprobst, & F. Solari (2017). *Adaptive Motion Pooling and Diffusion for Optical Flow Computation*. In International Conference on Image Analysis and Processing (pp. 60-71). Springer, Cham.
7. M. Chessa and N. Noceti (2017) *Investigating Natural Interaction in Augmented Reality Environments using Motion Qualities*. 12th International Conference on Computer Vision Theory and Applications, VISAPP 2017, 27th February – 1st March 2017, Porto, Portugal.
8. M. Chessa, G. Matafu', S. Susini, F. Solari (2016) *An experimental setup for natural interaction in a collaborative virtual environment*. 13th European Conference on Visual Media Production (CVMP16), 12-13th December 2016, London.
9. M. Chessa, L. Caroggio, H. Huang and F. Solari (2016) *Insert your own body in the Oculus Rift to improve proprioception*. International Conference on Computer Vision Theory and Applications, VISAPP 2016, 27th-29th February 2016, Rome.
10. Chessa, F Solari (2015) *Local Feature Extraction in Log-Polar Images*. 18th Conference on Image Analysis and Processing—ICIAP 2015.
11. M Chessa, NVK Medathati, G Masson, F Solari, P Kornprobst (2015) *Decoding MT Motion Response For Optical Flow Estimation: An Experimental Evaluation*. 23rd European Signal Processing Conference (EUSIPCO)
12. M. Chessa, M. Garibotti, V. Rossi, A. Novellino, & F. Solari (2015). *A virtual holographic display case for museum installations*. In Intelligent Technologies for Interactive Entertainment (INTETAIN),

- 2015 7th International Conference on (pp. 69-73). IEEE.
13. M. Chessa, M. Garibotti, G. Maiello, L. Caroggio, H. Huang, S.P. Sabatini, F. Solari (2014) *Detection of 3D position of eyes through a consumer RGB-D camera for stereoscopic mixed reality environments*. 4th International Conference on 3D Imaging, IC3D 2014; Liege; Belgium; 9 December 2014 through 10 December 2014
 14. M. Chessa, S. Murgia, L. Nardelli, Silvio P. Sabatini, F. Solari (2014) *Bio-inspired Active Vision for Obstacle Avoidance*. International Conference on Computer Vision Theory and Applications, VISAPP 2014, 5th-8th January 2014, Lisbon.
 15. M. Garibotti, M. Chessa, S.P. Sabatini, F. Solari (2013) *An affordable stereoscopic 3D augmented reality system for life-like interaction*. 10th European Conference on Visual Media Production (CVMP13), 6-7 November 2013, London.
 16. A. Gibaldi, A. Canessa, M. Chessa, F. Solari, S. P. Sabatini (2012) *How a Population-based Representation of Binocular Visual Signal Can Intrinsically Mediate Autonomous Learning of Vergence Control*. *Procedia Computer Science*, Volume 13, 2012, Pages 125-134, ISSN 1877-0509.
 17. M. Chessa, M. Garibotti, A. Canessa, A. Gibaldi, S.P. Sabatini, F. Solari. (2012) *A stereoscopic augmented reality system for the veridical perception of the 3D scene layout*. International Conference on Computer Vision Theory and Applications, VISAPP 2012, 24th-26th February 2012, Rome.
 18. M. Chessa, S. P. Sabatini, F. Solari and F. Tatti (2011) *A Quantitative Comparison of Speed and Reliability for Log-Polar Mapping Techniques*, *Computer Vision Systems – 8th International Conference, ICVS 2011*, Sophia Antipolis, France, September 20-22, 2011.
 19. G. Maiello, C. Silvestro, A. Canessa, M. Chessa, A. Gibaldi, S. P. Sabatini and F. Solari (2011) *Assessment of stereoscopic depth perception in augmented reality environments based on low-cost technologies*, *Applied Perception in Graphics and Visualization (APGV 2011)*.
 20. E. Martinez, A.P. del Pobil, M. Chessa, F. Solari, S.P. Sabatini. (2011) *An Integrated Virtual Environment for Visual-based Reaching*, *The ACM Intl. Conf. on Ubiquitous Information Management and Communication*, Seoul, 2011.
 21. A. Gibaldi, A. Canessa, M. Chessa, S. P. Sabatini, F. Solari. (2011) *A neuromorphic control module for real-time vergence eye movements on the iCub robot head*, 11th IEEE-RAS International Conference on Humanoid Robots (Humanoids).
 22. M. Chessa, S.P. Sabatini, F. Solari. (2009) *A fast joint bioinspired algorithm for optic flow and two-dimensional disparity estimation*. 7th International Conference on Computer Vision Systems, Belgium, 13-15 October, 2009.
 23. A. Gibaldi, M. Chessa, A. Canessa, F. Solari, S.P. Sabatini. (2009) *A neural model for binocular vergence control without explicit calculation of disparity*. *European Symposium on Artificial Neural Networks*, Bruges, Belgium, 22-24 April, 2009. [pdf]
 24. M. Chessa, F. Solari, S.P. Sabatini. (2009) *A Virtual Reality Simulator for Active Stereo Vision Systems*. International Conference on Computer Vision Theory and Applications (VISAPP), Lisbon 5-8 February 2009.
 25. M. Chessa, F. Solari, S.P. Sabatini, G.M. Bisio. (2008) *Motion Interpretation Using Adjustable Linear Models*. *British Machine Vision Conference (BMVC)*, Leeds 1-4 September 2008.
 26. G. Gastaldi, S.P. Sabatini, F. Solari, M. Chessa. (2008) *Systematic Phase-based interpretation of early vision processing*. International Conference on Mathematical Problems in Engineering ,Aerospace and Science (ICNPAA), Genova, 25-27 June 2008.
 27. M. Chessa, S.P. Sabatini, F. Solari, G.M. Bisio. (2007) *A Recursive Approach to the Design of Adjustable Linear Models for Complex Motion Analysis*. IASTED conference on Signal Processing, Pattern Recognition and Applications (SPPRA), Innsbruck 14-16 February 2007.

PATENTS

1. M. Chessa, F. Solari, M. Garibotti, S.P. Sabatini, *Rappresentazione stereoscopica tridimensionale perfezionata di oggetti virtuali per un osservatore in movimento*. Assignee: University of Genoa. Italian Patent application TO2011A001150, 14th December 2011.

2. M. Chessa, F. Solari, M. Garibotti, S.P. Sabatini. *Improved three-dimensional stereoscopic rendering of virtual objects for a moving observer*. Assignee: University of Genoa. International Patent application PCT/IB2012/057284, 13th December 2012.
3. M. Chessa, F. Solari, M. Garibotti, S.P. Sabatini, A. Novellino, M. Ventrella. *Apparecchiatura per la visione olografica virtuale* Assignee: University of Genoa and ETT SpA. Italian Patent application TO2014A000235, 21st March 2014.

SOFTWARE

1. P. Kornprobst, E. Castet, M. Chessa, & F. Solari *VRead Viewer* (Depot. 7/07/2017)
2. F. Solari, M. Chessa. Log-polar BlindSpotModel – Software modules for OpenCV library
3. M. Chessa, F. Solari. FFV1MT: A V1-MT feedforward architecture for optical flow estimation – Matlab code
4. Augmented Reality App: AR ‘Sonny’ Levi 3D viewer. The app is available for both Android and Apple tablets and smartphones.

EDITED BOOKS

1. M. Chessa F. Solari, S.P. Sabatini. Human-Centric Machine Vision. InTech, ISBN: 978-953-51-0563-3, 180 pages, 2012.
2. F. Solari, M. Chessa, S.P. Sabatini. Machine Vision – Applications and Systems. InTech, ISBN: 978-953-51-0373-8, 272 pages, 2012.

CHAPTERS

1. M. Chessa, N. Noceti, C. Martini, F. Solari, F. Odone (2018). Designing Assistive Tools for the Market. Computer Vision for Assistive Healthcare, 2018 pp 337-362
2. M. Chessa, M. Garibotti, A. Canessa, A. Gibaldi, S.P. Sabatini, F. Solari (2013). Veridical Perception of 3D Objects in a Dynamic Stereoscopic Augmented Reality System. In: G. Csurka et al.. Communications in Computer and Information Science, VISIGRAPP 2012. vol. 0359, p. 274-285, Springer-Verlag Berlin Heidelberg.
3. S. P. Sabatini, F. Solari, A. Canessa, M. Chessa and A. Gibaldi (2013). *Early Perception-Action Cycles in Binocular Vision: Visuomotor Paradigms and Cortical-Like Architectures*. Developing and Applying Biologically-Inspired Vision Systems: Interdisciplinary Concepts. IGI Global, 2013. 154-182.
4. A. Canessa, A. Gibaldi, M. Chessa, S.P. Sabatini and F. Solari (2012). *The Perspective Geometry of the Eye: Toward Image-Based Eye-Tracking*, Human-Centric Machine Vision, M. Chessa, F. Solari and S.P. Sabatini (Ed.), ISBN: 978-953-51-0563-3, InTech, Available from: The Perspective Geometry of the Eye: Toward Image-Based Eye-Tracking
5. S. P. Sabatini, F. Solari, M. Chessa (2012). *Context-Sensitive Recurrent Filters for Visual Motion Analysis*, Neurocomputing: Learning, Architectures and Modeling, Elizabeth T. Mueller (Ed.), ISBN: 978-1-61324-699-3, Nova publisher.
6. M. Vanegas, M. Chessa, F. Solari, S.P. Sabatini (2012). *Bio-Inspired Active Vision Paradigms in Surveillance Applications* *Bio-Inspired Active Vision Paradigms in Surveillance Applications*, Machine Vision – Applications and Systems, F. Solari, M. Chessa, S.P. Sabatini (Eds.), InTech, ISBN: 978-953-51-0373-8, pp. 1-22, 2012
7. M. Chessa, F. Solari and S.P. Sabatini (2011). *Virtual Reality to Simulate Visual Tasks for Robotic Systems*, Virtual Reality, Jae-Jin Kim (Ed.), ISBN: 978-953-307-518-1, InTech, Available from: Virtual Reality to Simulate Visual Tasks for Robotic Systems

ABSTRACTS IN PEER-REVIEWED INTERNATIONAL CONFERENCES

1. M. Chessa, A. Patino-Saucedo, H. Rostro, E. Castet, F. Solari, & P. Kornprobst (2017). *Real-time image*

- enhancement in virtual reality applications for low vision people.* In Vision 2017, the 12th International Conference by the International Society for Low Vision Research and Rehabilitation (ISLRR).
2. G. Maiello, M. Chessa, F. Solari, & P. Bex (2017). *Optimal Combination of Disparity across a log Polar Scaled Visual Field.* Journal of Vision, 17(10), 757-757.
 3. A. Gibaldi, A. Canessa, M. Chessa, M. Fato, F. Solari, & S.P. Sabatini (2017). *The GENUA PESTO Database-GENoa hUman Active fixation database: PEripersonal space STereoscopic images and grOund truth disparity.* Journal of Vision, 17(10), 1067-1067.
 4. G. Maiello, M. Chessa, P. J. Bex, F. Solari (2016) *Can Neuromorphic Computer Vision Inform Vision Science? Disparity Estimation as a Case Study* MODVIS 2016
 5. N.V.K. Medathati, P. Kornprobst, G. Masson, M. Chessa, F. Solari (2015) *Adaptive Motion Pooling and Diffusion for Optical Flow* MODVIS 2015.
 6. G. Maiello, M. Chessa, P. J. Bex, F. Solari (2015) *A Space-Variant Model for Motion Interpretation across the Visual Field* MODVIS 2015.
 7. G. Maiello, M. Chessa, F. Solari, P. Bex (2013) *Stereoscopic fusion with gaze-contingent blur.* Perception 42ECP Abstract Supplement, page 117.
 8. G. Maiello, M. Chessa, F. Solari, P. Bex (2013) *The Contribution of Perspective, Blur and Disparity to Depth Perception in Natural Vision* ARVO 2013 Annual Meeting
 9. M. Chessa, G. Maiello, C. Silvestro, A. Canessa, A. Gibaldi, S. P. Sabatini, F. Solari (2011) *Assessment of the visuo-motor coordination in the peripersonal space through augmented reality environments.* Perception 40 ECP Abstract Supplement, page 63.
 10. S. P. Sabatini, A. Canessa, A. Gibaldi, M. Chessa, F. Solari (2011) *Statistical disparity patterns experienced by an active observer in the peripersonal space.* Perception 40 ECP Abstract Supplement, page 105
 11. A. Gibaldi, A. Canessa, M. Chessa, F. Solari, S. P. Sabatini (2011) *Adaptive read-out mechanisms of disparity population codes: reaching the theoretical disparity-size correlation limit with minimal binocular resources.* Perception 40 ECP Abstract Supplement, page 103
 12. A. Canessa, M. Chessa, A. Gibaldi, F. Solari, S. P. Sabatini (2011) *Empirical horopter explained by the statistics of disparity patterns in natural space.* Perception 40 ECP Abstract Supplement, page 7
 13. A. Gibaldi, A. Canessa, M. Chessa, F. Solari, S.P. Sabatini (2011). *A cortical model for vergence control: advantages of space-variant geometry of the cortical domain.* Cosyne11, Salt Lake City, Utah, February 24 – March 1, 2011.
 14. A. Gibaldi, A. Canessa, M. Chessa, S.P. Sabatini and F. Solari. *Read-out rules for short-latency disparity-vergence responses from populations of binocular energy units: the effect of vertical disparities* 33rd European Conference on Visual Perception, Lausanne, Switzerland, 22-26 August, 2010.
 15. M. Chessa, S.P. Sabatini, F. Solari. *A virtual reality tool for disparity statistics in the peripersonal space.* 32nd European Conference on Visual Perception, Regensburg, Germany, 24-28 August, 2009.
 16. S.P. Sabatini, M. Chessa, F. Solari. *How embedding prior constraints improves coding and decoding strategies in a neural distributed architecture for depth perception.* 32nd European Conference on Visual Perception, Regensburg, Germany, 24-28 August, 2009.
 17. M. Chessa, A. Canessa, A. Gibaldi, F. Solari, S.P. Sabatini. *Embedding Fixation Constraints into Binocular Energy-based Models of Depth Perception.* International Conference on Cognitive and Neural Systems, Boston, Massachusetts, 27-30 May, 2009.
 18. A. Gibaldi, M. Chessa, A. Canessa, S.P. Sabatini, F. Solari. *Reading binocular energy population codes for short-latency disparity-vergence eye movements.* International Conference on Cognitive and Neural Systems, Boston, Massachusetts, 27-30 May, 2009.
 19. S.P. Sabatini, M. Chessa, G. Gastaldi, F. Solari, G. M. Bisio. *Cortical Architectures for Early Joint Coding of 3D Dynamic Visual Parameters: Complex Feature Mapping and Distributed Representations.* Workshop on Computational Cognitive Neuroscience to Computer Vision, Bielefeld University, Germany, 21 March 2007.

