

Bio-sketch

Dr. Maurizio Schmid received a MSc degree in Electrical Engineering from Sapienza University of Rome, Rome, Italy (2000), and a PhD in Biomedical Engineering from University of Bologna, Bologna, Italy (2004). From 2004 to 2006 he was Research Associate within the Department of Applied Electronics, Roma Tre University, Rome, Italy, and from 2006 to 2008 he was Research Associate in the Department of Physical Medicine and Rehabilitation, Harvard Medical School, Cambridge, MA USA. He currently serves as Assistant Professor in Biomedical Engineering in the Department of Applied Electronics, Roma Tre University, Rome, Italy.

His research work includes biomedical signal processing and modelling in the area of posturography and motor control, and the development of algorithms and devices in the area of rehabilitation engineering, where he's now involved in studies on the validity and effectiveness of virtual environment systems and games as tools for rehabilitation and ambient assisted living. He has participated in research programmes funded by the EU (FP7, ERASMUS-IP), and National Institutions for Research and Higher Education (PRIN, FIRB).

Since 2004, he has been appointed Lecturer for the course 'Health Management Systems' at the School of Engineering in Roma Tre University, where he currently teaches the course 'Neural Engineering' within the Biomedical Engineering MSc programme, and where he currently guides BioLab³, Laboratory of Biomedical Engineering. He is in the board of the PhD Programme in Biomedical Electronics, Electromagnetics and Telecommunications in the same university, and in the board of the PhD programme in Cognitive Psychology and Psychophysiology at Sapienza University of Rome. Author of more than 90 published contributions in the area of biomedical and rehabilitation engineering, he currently serves as reviewer for many journals in the area of biomedical engineering, including IEEE Transactions on Information Technology in Biomedicine, Medical and Biological Engineering and Computing. Experimental Brain Research, and IEEE Pervasive Computing. He is an IEEE, EMBS, and ISPGR member.

Short list of selected publications on ISI Journals

- [1] R. Muscillo, **M. Schmid**, S. Conforto, T. D'Alessio. Early recognition of upper limb motor tasks through accelerometers: real-time implementation of a DTW-based algorithm. *Computers in Biology and Medicine*, 41(3): 164-172, 2011
- [2] R. Muscillo, **M. Schmid**, S. Conforto, T. D'Alessio. An adaptive Kalman-based Bayes estimation technique to classify locomotor activities in young and elderly adults through accelerometers. *Medical Engineering & Physics*, doi:10.1016/j.medengphy.2010.05.009, 2010.
- [3] S. Conforto, I. Bernabucci, G. Severini, **M. Schmid**, T. D'Alessio. Biologically inspired modelling for the control of upper limb movements: from concept studies to future applications. *Frontiers in Neurorobotics* 3:3, 2009
- [4] **M. Schmid**. Reinforcing motor re-training and rehabilitation through games: a machine-learning perspective. *Frontiers in Neuroengineering* 2:3, 2009.
- [5] D. Torricelli, M. Goffredo, S. Conforto, **M. Schmid**. An adaptive blink detector to initialize and update a view-based remote eye gaze tracking system in a natural scenario. *Pattern Recognition Letters*, 30: 1144-1150, 2009.
- [6] M. Goffredo, **M. Schmid**, S. Conforto, M. Carli, A. Neri, T. D'Alessio. Markerless Human Motion Analysis in Gauss-Laguerre Transform Domain: Application to Sit-to-Stand in Young and Elderly People, *IEEE Transactions on Information Techn Biomed*, 3: 207-216, 2009.
- [7] D. Torricelli, S. Conforto, **M. Schmid**, T. D'Alessio "A Neural-Based Remote Eye Gaze Tracker under Natural Head Motion", *Computer Methods and programs in Biomedicine*, 92(1): 66-78, 2008.
- [8] M. Goffredo, I. Bernabucci, **M. Schmid**, S. Conforto, "A neural tracking and motor control approach to improve rehabilitation of upper limb movements", *Journal of Neuroengineering and Rehabilitation* 5(1):5, 2008.

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- [9] R. Muscillo, S. Conforto, **M. Schmid**, T. D'Alessio. Minimizing the Set Up for ADL Monitoring through DTW Hierarchical Classification on Accelerometer Data. *WSEAS Transactions on biology and biomedicine*, 3(5): 47-53, 2008.
- [10] I. Bernabucci, S. Conforto, M. Capozza, N. Accornero, **M. Schmid**, T. D'Alessio, "A biologically inspired neural network controller for ballistic arm movements.", *Journal of Neuroengineering and Rehabilitation*, 4(1):33, 2007.
- [11] **M. Schmid**, S. Conforto, L. Lopez, T. D'Alessio, "Cognitive load affects postural control in children", *Experimental Brain Research*, 179(3):375-385, 2007.
- [12] S. Conforto, **M. Schmid**, A. Neri, T. D'Alessio, "A neural approach to extract foreground information from human movement images", *Computer Methods and Programs in Biomedicine*, 82(1):73-80, 2006.
- [13] P. Caselli, S. Conforto, **M. Schmid**, N. Accornero, T. D'Alessio, "Different sensorimotor adaptation to horizontal and vertical mirror distortions during ballistic arm movements", *Human Movement Science*, 25(3):310-325, 2006.
- [14] M. Goffredo, **M. Schmid**, S. Conforto, T. D'Alessio, "A Markerless sub-pixel motion estimation technique to reconstruct kinematics and estimate the centre of mass in posturography", *Medical Engineering and Physics*, 28(7):719-726, 2006.
- [15] **M. Schmid**, S. Conforto, L. Lopez, P. Renzi, T. D'Alessio, "Development of postural strategies in children: a factorial design study", *Journal of NeuroEngineering and Rehabilitation* 2:29, 2005.
- [16] **M. Schmid**, S. Conforto, D. Bibbo, T. D'Alessio, "Respiration and postural sway: detection of phase synchronizations and interactions", *Human Movement Science*, 23: 105-119, 2004.
- [17] **M. Schmid**, S. Conforto, V. Camomilla, A. Cappozzo, T. D'Alessio, "The sensitivity of posturographic parameters to acquisition settings", *Medical Engineering and Physics*, 24(9): 623-631, 2002.
- [18] S. Conforto, **M. Schmid**, V. Camomilla, T. D'Alessio, A. Cappozzo, "Hemodynamics as a possible internal mechanical disturbance to balance", *Gait & Posture*, 14(1): 28-35, 2001.

Recent contributions on conferences

- [1] F. Draicchio, A. Silveti, F. Amici, S. Iavicoli, A. Ranavolo, R. Muscillo, **M. Schmid**, T. D'Alessio, G. Sandrini, M. Bartolo, G. Orengo, G. Saggio, C. Conte. Global biomechanical evaluation during work and daily-life activities. Proc. 4th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2010, Valencia, Spain.
- [2] C. De Marchis, I. Bernabucci, G. Severini, S. Conforto, **M. Schmid**, T. D'Alessio, "Wrist tremor reduction through a novel neural model", Proc. XVIII Congress of the International Society of Electrophysiology and Kinesiology, ISEK 2010, Aalborg, Denmark.
- [3] M. Gneo, R. Muscillo, M. Goffredo, S. Conforto, **M. Schmid**, T. D'Alessio. Real-time adaptive neural predictors for upper limb gestures blind recognition. 11th International Congress of the IUPESM - Medical Physics and Biomedical Engineering World Congress 2009, Munich, Germany: September 7-12, 2009
- [4] C. Mancinelli, S. Patel, L.C. Deming, **M. Schmid**, B.L. Pattriti, J.J. Chu, J. Beckwith, R. Greenwald, J. Healey, P. Bonato. Assessing the feasibility of classifying toe-walking severity in children with cerebral palsy using a sensorized shoe. Conference of the IEEE Engineering in Medicine and Biology Society, Minneapolis (MN) USA: September 3-6, 2009
- [5] R. Muscillo, G. Severini, **M. Schmid**, T. D'Alessio. Distinguishing among different lower limb physical activities through a Bayes' classifier applied on features extracted from single-axis accelerometer data. ISPGR 19th conference, Bologna, Italy: June 21-25, 2009
- [6] M. Goffredo, **M. Schmid**, L. Lopez, S. Conforto, T. D'Alessio. Markerless Sit to Stand analysis to predict SPPB scores in elderly people. International Conference ISPGR 2009, Bologna: 21-25 June, 2009
- [7] G. Severini, S. Conforto, **M. Schmid**, T. D'Alessio. Movement Intent as Predicted by Time-Varying Cortico-Muscular Coherence Estimated through MAR Models. ICRA Workshop on Wearable Robots, Kobe, Japan: May 12-17, 2009
- [8] P. K. Kasi, L.S. Krivickas, M. Meister, E. Chew, **M. Schmid**, G. Kamen, E.A. Clancy, P. Bonato. Motor unit firing characteristics in patients with amyotrophic lateral sclerosis. IEEE 35th Annual Northeast Bioengineering Conference, Boston, MA USA: April 3-5, 2009
- [9] F. Cutolo, C. Mancinelli, S. Patel, N. Carbonaro, **M. Schmid**, A. Tognetti, D. De Rossi, P. Bonato. A sensorized glove for hand rehabilitation. IEEE 35th Annual Northeast Bioengineering Conference, Boston, MA USA: April, 3-5, 2009
- [10] **M. Schmid**, R. Muscillo, S. Conforto. Classifying among motor activities executed at different speeds: SVM vs. MAP applied on features extracted from accelerometer data. I GNB Workshop on KDD in Bioingegneria, Pavia, Italy: February 20, 2009