

Name: Cristiano De Marchis

Place of birth: Rome, Italy

Date of birth: 02nd November 1984

Current Position and Personal Contacts:

PhD Candidate in Bioengineering

Department of Engineering

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Bio-Sketch:

Cristiano De Marchis received the MSc in Electronic Engineering at the 'Roma TRE' University of Rome in 2009. Since 2010 he is in the PhD program in Biomedical Electronics, Electromagnetics and Telecommunications, University Roma TRE. He is currently involved in research activities for the development of experimentally-driven models related to the modular control of human movement through the combination of multi-modal signals, the development of algorithms and solutions in the field of neuro-rehabilitation and biomedical signal processing. He's also assisting BioLab3 research and teaching activities in the Department of Engineering at the University 'Roma TRE'. He is a student member IEEE, EMBS, GNB.

Education:

2010 - present: PhD candidate at the Department of Applied Electronics, PhD program in Biomedical Electronics, Electromagnetics and Telecommunications, Roma TRE University. Research Project Title: Computational Models in Bioengineering of the Neuromuscular System.

2007-2009: MSc in Electronics Engineering/ Bioengineering, Roma TRE University. Thesis Title: sEMG signal processing techniques for the detection and characterization of muscular tremor. Grade: 110/110 cum Laude

2003-2006: BSc in Electronics Engineering/ Telecommunications, Roma TRE University. Thesis Title: Project of Slow Light Devices in 2-Dimensional Photonic Crystal. Grade: 110/110

1998-2003: Scientific High School Degree at Liceo Scientifico Statale J.F. Kennedy, Rome. Grade: 100/100

Participation to Research Projects and Programs:

2008-2011: EU-FP7 Program FP7-ICT-2007-2 Project #224051: "TREMOR — An ambulatory BCI-driven tremor suppression system based on functional electrical stimulation"

Research Activities in Foreign Institutions:

July 2011: "Biomechanical Modeling of the Upper Limb". Instituto de Biomechanica de Valencia (IBV).

Research Interests:

Muscle Synergies, Modularity of the motor system, Human Movement, Motor Control, Electromyography, Biomechanics, Neuromechanics, Musculoskeletal Modeling, Signal Processing, Neuro-rehabilitation, Tremor.

List of Scientific Publications

International Journal Articles:

C. De Marchis, M. Schmid, S. Conforto. An optimized method for tremor detection and temporal tracking through repeated second order moment calculations on the surface EMG signal. *Med Eng Phys* 34(9): 1268-1277. (2012)

C. De Marchis, M. Schmid, D. Bibbo, S. Conforto. Inter-individual variability of forces and modular muscle coordination in cycling: a study on untrained subjects. *Hum Mov Sci* (Under Review)

C. De Marchis, M. Schmid, D. Bibbo, A.M. Castronovo, T. D'Alessio, S. Conforto. Feedback of mechanical effectiveness induces adaptations in motor modules during cycling. *Frontiers in Computational Neuroscience* (Under Review)

Abstracts appeared in International Journals:

S. Conforto, **C. De Marchis**, G. Severini, T. D'Alessio. Tremor detection and tracking through sEMG analysis. *Gait & Posture*(30):S56-S57.(2009)

Peer Reviewed International Conference papers:

C. De Marchis, A.M. Castronovo, D. Bibbo, M. Schmid, S. Conforto. Muscle synergies are consistent when pedaling under different biomechanical demands. *Conf Proc IEEE Med Eng Biol Soc* 2012:3308-3311.(2012)

A.M. Castronovo, **C. De Marchis**, D. Bibbo, S. Conforto, T. D'Alessio. Neuromuscular adaptations during submaximal prolonged cycling. Conf Proc IEEE Med Eng Biol Soc 2012:3612-3615.(2012)

C. De Marchis, S. Conforto, G. Severini, M. Schmid, T. D'Alessio. Detection of tremor bursts from the sEMG signal: an optimization procedure for different detection methods. Conf Proc IEEE Med Eng Biol Soc 2011:7508-7511.(2011)

G. Severini, S. Conforto, **C. De Marchis**, M. Schmid, T. D'Alessio. A SNR-independent formulation of a double threshold algorithm for the estimation of muscle activation intervals. Conf Proc IEEE Med Eng Biol Soc 2011:7500-7503.(2011)

International Conference Abstracts:

C. De Marchis, S. Conforto, G. Severini, M. Schmid, T. D'Alessio. Detecting and characterizing tremor from the surface EMG signal. World congress of Medical Physics and Biomedical Engineering. Beijing (2012)

A.M. Castronovo, **C. De Marchis**, G. Severini, D. Bibbo, T. D'Alessio. Electromyographic features for the characterization of task-failure during submaximal cycling. World congress of Medical Physics and Biomedical Engineering. Beijing (2012)

C. De Marchis, I. Bernabucci, G. Severini, S. Conforto, M. Schmid, T. D'Alessio. Wrist tremor reduction through a novel neural model. Proceedings of the XVIII ISEK congress (2010).

National Conference Abstracts:

C. De Marchis, A.M. Castronovo, D. Bibbo, S. Conforto. Stability of muscle synergies across different pedaling strategies. Proceedings of the III GNB Congress. Rome.(2012).

A.M. Castronovo, **C. De Marchis**, D. Bibbo, T. D'Alessio. Evaluation of neuromuscular efficiency at task-failure during submaximal cycling. Proceedings of the III GNB Congress. Rome.(2012).

G. Severini, S. Conforto, M. Schmid, **C. De Marchis**, T. D'Alessio. A real-time EEG-EMG multimodal approach for the detection of voluntary activity in patients affected by tremor impairments. Proceedings of the II GNB Congress. Turin.(2010).

C. De Marchis, S. Conforto, I. Bernabucci, M. Schmid, T. D'Alessio. A biologically inspired neural model for the active control of tremor movements. Proceedings of the II GNB Congress. Turin.(2010).

M. Svaluto Moreolo, **C. De Marchis**, G. Cincotti. Dispositivi slow light in cristallo fotonico 2D. 10th FOTONICA Congress, Mantova,(2007).