Call for Papers for a Special Theme Issue of IEEE Transactions on Neural Systems and Rehabilitation Engineering dedicated to Advances in Control of Multi-functional Powered Upper-Limb Prostheses

This special issue is dedicated to Advances in Control of Multi-functional Powered Upper-Limb Prostheses. Upper-limb amputations are particularly prevalent in young adults. Neuromotor prostheses offer an effective approach to restore motor function. Current clinically-available upper-limb prosthetic solutions can improve the users’ quality of life dramatically. Commercial prosthetic arms offer proportional control of only a few degrees of freedom (DoFs). However, control of multiple DoFs (joints) often requires sequential control of individual joints with cumbersome switching techniques that can tire the user after a short while. Therefore, to become fully integrated into a patient’s motor repertoire, the performance and reliability of upper-limb prostheses must still improve greatly.

The objective of this special issue is to address and disseminate state-of-the-art research and development in upper-limb prosthesis control. We seek original papers with novel research contributions in all theoretical and technological advances of relevance and impact in multi-functional upper-limb prosthetics.

Topics for this theme include, but are not limited to:

- Innovative methodologies for the control of multi-functional prostheses;
- Sensory feedback to the nervous system and sensory substitution;
- Paradigms that allow efficient closed-loop control;
- Study of motor control with neural- and myoelectric-controlled interfaces;
- Bioinstrumentation for recording of the biosignal and/or delivery of sensory feedback;
- Advanced signal processing algorithms for analysis of biopotentials;
- Modelling of generation of myoelectric signals with implications for upper-limb prosthesis control.

Invited and regular papers will undergo full review by three reviewers, using the Manuscript Central portal.

**Guest Editors:**

- Kianoush Nazarpour, Touch Bionics, UK
- Christian Cipriani, The BioRobotics Institute, Scuola Superiore Sant'Anna, Italy
- Dario Farina, Department of Neurorehabilitation Engineering, University Medical Center Göttingen, Germany
- Todd A Kuiken, Center for Bionic Medicine, Rehabilitation Institute of Chicago, USA

Submission deadline: August 1, 2013