

A Multi Function Myocontroller for Upper Limb Prostheses

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Abstract : Myoelectrically controlled prostheses are becoming more and more popular, for below-elbow amputation, the wrist flexor and extensor muscle group, while for above-elbow biceps and triceps brachii muscles are used for control of the prosthesis. A two site multi-function controller is presented. Two stainless steel bipolar electrode pairs are used to monitor the activities in both muscles. The detected signals are processed by new pre-whitening technique to identify the accurate tension estimation in these muscles. These estimates will activate the relevant prosthesis control signal, with a time constant of 200 msec. It is ensured that the tension states in the control muscle to activate a particular prosthesis function are similar to those used to activate normal functions in the natural hand. This facilitates easier training.

Keywords : prosthesis, biosignal processing, pre-whitening, myoelectric controller

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