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Thesis title :
Optimizing Muscle Control for Neural Prosthetics

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Abstract

Actuated upper-limb prostheses have substantially improved, and a recent surgical technique that transfers residual nerves to alternative muscle sites has increased the number of muscle signals available to control these devices. What is critically needed now is to develop efficient control strategies linking the two. The goal of this project is to enable this by revealing the key mechanisms by which our hierarchical sensorimotor system coordinates muscles. In particular, this project will establish (i) how the nervous system learns new patterns of muscle activity, (ii) how the original sensorimotor mapping is critical and can be restored, and (iii) how amputee could benefit from control schemes integrating subsidiary muscles from the trunk and other limbs.

Qualification required

Familiar with EMG recordings and MATLAB programming