MASTER THESIS: Neuroprosthetic control of adaptive locomotion in rats with spinal cord injury

BACKGROUND: We are an interdisciplinary research team composed of engineers, biologists, medical doctors, physicists and roboticians. Recently, we demonstrated that rats, completely paralyzed after spinal cord injury (SCI), exposed the capacity to recover full weight bearing stepping in the presence of epidural electrical stimulation of the spinal cord (Courtine et al., Nature Neuroscience 2009).

In our current projects we now found that specific patterns of epidural spinal cord stimulation promote substantial and reproducible changes in the characteristics of locomotion. In a next step we now aim to design a library of electrical stimulation functions that will allow paralyzed animals to recover their ability to initiate locomotion, walk up stairs, walk in curves, and reach for objects.

YOUR ROLE: Real Time data processing of EMG, kinematic and kinetic data. Design of electrical stimulation algorhythms. Evaluation of the controllability of locomotion. Work with animals and neuroprosthetics.

START: April 2012, Don’t hesitate to contact us, projects can be adapted to your scientific background

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Publications on this project: