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Myoelectrical Control of Multiple Channels Based on Single Muscle Contractions

Tech ID: 11250 / UC Case 2007-439-0

ABSTRACT

Scientists at the University of California, Davis have developed a method to control multi-channel myoelectric signals.

FULL DESCRIPTION

Myoelectric technology uses the electrical signals generated during muscle contractions to generate external control signals^{1,2}. These measured signals are amplified and processed to generate a desired response in an external device(s). Current available methods describe a one-to-one relationship in which one muscle produces electrical signals to control a single target³⁻⁵. That is to say, current systems generate one control signal from each muscle, limiting the number of control signals available and necessitating many skin-mounted sensors on several superficial muscles⁶⁻⁸.

Scientists at the University of California, Davis have developed a method to produce two or more control signals based on the electrical signals obtained from a sensor(s) mounted on the skin covering a single superficial muscle. Such signals can be used to control multiple aspects of one or more devices.

APPLICATIONS

- ▶ Computer interfaces
- ▶ Video game controls
- ▶ Educational equipment
- ▶ Interfaces for disabled individuals with assistive technologies such as wheelchairs and prosthetic limbs.

FEATURES/BENEFITS

- ▶ Uses only one muscle to control multiple aspects of one or more devices

RELATED MATERIALS

- ▶ 1. Gordon, K. E. and Ferris, D. P. Proportional Myoelectric Control of a Virtual Object to Investigate Human Efferent Control. *Exp. Brain. Res.* 159:478-486. 2004.
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- ▶ 4. Karlsson, S. et al. Time-Frequency Analysis of Myoelectric Signals During Dynamic Contractions: A Comparative Study. *IEEE transactions on Biomedical Engineering.* 47(2):228-238. 2000.
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- ▶ 7. Chin, C. et al. Hands-Free Human Computer Interaction Via an Electromyogram-Based Classification Algorithm. *International ISA Biomedical Sciences Instrumentation Symposium.* 2005; 41:31-6.
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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,504,146	08/06/2013	2007-439

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OTHER INFORMATION

KEYWORDS

Myoelectrical, sensors, muscle, myoelectrical control

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Bioinformatics
- ▶ **Imaging**
 - ▶ Other
- ▶ **Medical**
 - ▶ Disease: Central Nervous System
 - ▶ Disease: Musculoskeletal Disorders
 - ▶ Rehabilitation

RELATED CASES

2007-439-0

RELATED TECHNOLOGIES

- ▶ [Mathematical Model and Apparatus to Optimize Functional Electrical Stimulation for Non-Isometric Limb Movement](#)

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Mathematical Model and Apparatus to Optimize Functional Electrical Stimulation for Non-Isometric Limb Movement](#)
- ▶ [Biomimetic Chemical Compounds for Capturing Carbon Dioxide from Power Plant Stacks and the Atmosphere](#)

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