University of Stuttgart

Institute of Robust Power Semiconductor Systems

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Power Electronics

Sensor design: Electromyography Sensor for Microcontroller Applications

Bachelor Thesis / Study Thesis

Introduction:

When you keep betterment of the society as a reason to use science, one can think of outstanding ideas. In one of these endeavours, this thesis has been designed to merge biology and electronics in the field of prosthetics for physically handicap disabled people.

The main aim of this research is to develop a basis for a sensor which detects movement of muscles. Then program a micro-controller to perform a certain task depending on the signal received from the developed sensor.

Tasks:

- Design of a muscle sensor
- Micro-controller design
- Signal system analysis
- Programming of micro-controller

Skills Required:

- Knowledge of active and passive devices in electronics
- Basic circuit designing
- Microcontroller programming (C programming)
- Embedded systems

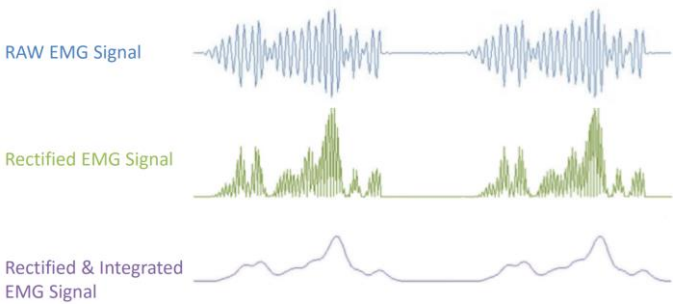

Fig 1. EMG Signals[1]

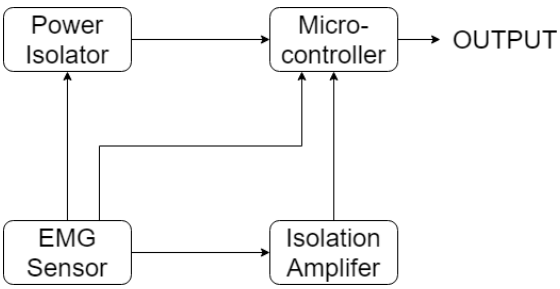

Fig 2. Block Diagram for EMG sensor with microcontroller application

[1] Myoware Muscle Sensor User Manual