

**CNT-COATED THREAD FOR WIRELESS AND SYNCHRONOUS
MECHANOMYOGRAPHY MEASUREMENT**

By

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in

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Mechanomyography (MMG) is an alternative to electromyography for methods in measuring muscle activity. It works by measuring muscle mechanical activity. Current MMG researches use expensive equipment with intricate application. A method for an affordable, comfortable, and non-invasive device is to use thread-based CNT-coated piezoresistive sensor. This sensor was sewn to kinesiology tape that will attach onto human skin. This study aimed to see the muscle activity of four main lower limb muscles doing the sit-to-stand (STS) movement. The MMG signal is to be sent wirelessly via Wi-Fi to a TCP server in a local network. Wheatstone bridge circuit was used for resistance to voltage conversion which will be further amplified and recorded to computer via microcontroller. Five young healthy male subjects within a selected group of age with normal body mass index (18.50 – 24.99) participated in this research.

Keywords: mechanomyography, fabric-based, cotton, carbon nanotubes, piezoresistive, sit-to-stand, dip and dry, strain gage, thread



DEDICATION

I dedicate this work to God, the world, my family and my friends.



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I have found my coursework throughout the biomedical engineering program to be both inspiring and exciting, providing me different tools with which to analyze and solve ideas and problems.

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