FIU Biomedical Engineering
FLORIDA INTERNATIONAL UNIVERSITY

Biomedical Engineering
Wallace H. Coulter Foundation
Lecture Series

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Wearable Brain Monitors with Real-Time EEG Analysis:

Applications in Neurology, Sleep Medicine, Psychiatry, and Anesthesiology

Dr. Mo Modarres
Director of the Brain Measurement Core,
Brain Research & Rehabilitation Center,
NF/SG VA Health System (Gainesville, FL).

Friday, April 25th ,2014
LECTURE: 9:00 AM - 10:00 AM

ENGINEERING CENTER
ROOM EC 1107
10555 WEST FLAGLER STREET
MIAMI, FL 33174

Abstract: There is a renewed interest and emerging recognition on the importance of the dynamic and quantitative monitoring/analysis of cortical activity during normal and diseased conditions, and a quest for identifying bio/neuro markers that are sensitively/specifically associated with abnormalities in brain function in various neurological, psychiatric, and sleep disorders. This presentation will describe a new class of EEG characterization algorithms which are based on a novel integration of several parametric and non-parametric time-frequency analysis methods. The presentation will illustrate the results of utilization of these algorithms, in conjunction with a new series of clinical-grade wearable brain monitoring hardware, in assessing and comparing the cortical states of cohorts of human subjects (normal and patients) during resting and active wakefulness, while performing specific tasks, in drowsy/fatigue state, during sleep, and in a state of unconsciousness induced by anesthetic agents during surgery. Patient population in the aforementioned studies consists of those with specific neurological disorders (epilepsy and seizure, traumatic brain injury), psychiatric disorders (attention deficit hyperactivity disorder, depression, anxiety, and post-traumatic stress disorder), and sleep disorders (obstructive sleep apnea, insomnia, and daytime sleepiness).

Biography: Mo Modarres is the Director of the Brain Measurement Core, BRRC, at the Gainesville VA Health System. He is also an adjunct BME faculty at the University of Florida (Gainesville), as well as University of South Florida (Tampa). Dr. Modarres obtained a BS, MS, and PhD all in BME from Case Western Reserve University. His prior positions include faculty and associate chair of BME at Amirkabir University (Iran), Director of Biomedical and Controls Engineering at Cleveland Medical Devices Inc. and president of its spin-off company, NeuroWave Systems Inc. (NSI). During his tenure at CleveMed and NSI, Dr. Modarres led the effort for the development and commercialization of a new class of clinical-grade portable/wearable brain dysfunction and sleep monitoring devices and algorithms supported by numerous small business innovation research (SBIR) grants from NIH and DOD. Dr. Modarres's current research is focused on the development of multi-modal brain imaging acquisition and analysis techniques for Traumatic brain Injury, post-traumatic Stress Disorder, mood disorders (major depression, generalized anxiety), and degenerative diseases (Dementia, Alzheimer's).

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