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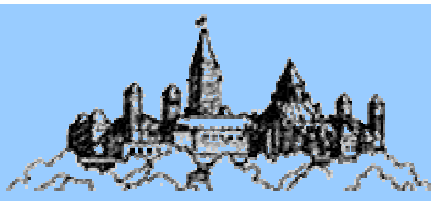

A quantitative measure for the separation of neurological and neurodegenerative disorders

Dr. Brian Lithgow

Director of Teaching, Monash University Centre for Biomedical Engineering; Leader, Diagnostic and Neurosignal Processing Research Group;Senior Research Fellow, Alfred Psychiatry Research Centre

Sept 16, 2009
admission is free
18:00 – 19:30
Mackenzie Building 4359
Carleton University
Light refreshment will be served

The quantitative separation of neurological and neurodegenerative disorders remains challenging. Some neurological disorders still require quantitative biomarkers to be identified to enable identification let alone separation (eg. Schizophrenia). The Vestibular system is strongly linked to motor control, emotional and behavioural centers of the brain. A new technique called ElectroVestibuloGraphy will be described. These recordings are processed to extract otoacoustic field potentials using a patented Neural Event Extraction Routine. These Field Potentials are extracted in background and in response to tilt stimuli to generate features used in classifying neurological and neurodegenerative disorders. Preliminary data showing separation of Parkinson's Disease, Schizophrenia, Depression, Meniere's Disease and Controls from each other will be presented. This research has attracted two ARC linkage grants, one NHMRC grant, 5 funded scholarships, Monash University commercialization funding, and industry cash funding. An Australian Government Comet grant for commercializing this research has been recently awarded. Two international and one PCT Patents have been generated/applied for and a company formed to commercialize the neurodiagnostics research namely Neural Diagnostics Pty Ltd.

Brian Lithgow has been interested in vestibular and auditory electroneurophysiology, signal processing, and the development of diagnostics throughout his career. More recently, he has done work in development of:

- Signal processing algorithms for vestibular diagnostics (Meniere Disease, BPPV) and auditory prosthesis.
- Models for vestibular dynamic responses of the semicircular canals and otolithic organs.
- Models for electrical and audio stimulation of the cochlea consequent to high pulse rate electrical stimulation of the cochlea and modiolar stimulation.
- Improved understanding of auditory and vestibular electroneurophysiology
- Speech Processing and speaker identification.
- Diagnostic development for neurological and neurodegenerative disorders Parkinson Disease, Schizophrenia, and Depression.

After a career in industry he founded the Monash University Centre for Biomedical Engineering (MUCBE) and is currently the Director of Teaching for MUCBE. He is also currently the Leader of the Diagnostic and Neurosignal Processing Research Group at Monash University and a Senior Research Fellow at the Alfred Psychiatric Research Centre where he has a second new fully equipped research laboratory The Diagnostic and Neurosignal Processing Research Laboratory.

Publications include 6 books, 2 book chapter, 3 patents, 28 refereed journal and 63 refereed conference papers.
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