THE ADVANCED EEG ANALYSIS WORKSHOP

PRESENTER BIOS:

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Professor Dimitrijevic's research uses electroencephalography (EEG) to study cognition and sensory processing associated with hearing loss and aging. His projects mostly focus on speech perception in human adults who have had their hearing restored using cochlear implants. Current projects include: speech and music perception, neural plasticity associated with hearing loss and restoration, working memory and measures of cognitive load, the use of mobile EEG imaging technology to monitor real-world brain function.

High density EEG is used to map out brain regions underlying listening disorders. A big focus of the lab is mobile EEG imaging. This field of study goes outside the lab and into the real-world. These studies aim to characterize brain responses while a listener follows a conversation in a natural setting. Other areas of research include: cross-modal neuroplasticity associated with hearing loss and recovery with a cochlear implant and the effects of hearing loss on working memory. Collaborators: Drs. Darren Kadis and Karen Gordon

Phillip Gilley, Ph.D.

Professor Phillip Gilley is a Research Scientist Level III in the Institute of Cognitive Science at the University of Colorado, Boulder.

Dr. Gilley's research is focused on modeling non-linear, dynamic brain processes during multisensory perception. A novel component of his work is a higher-order statistical approach to classifying frequency specific, spatio-temporal brain signals from the electroencephalogram (EEG) coupled with high-resolution source imaging techniques. Dr. Gilley applies these models to behavioral data that can be used to predict causal order of classified brain signals.

ABSTRACT:

The Advanced EEG Analysis workshop will include: 1) EEG/ERP simulations using BESA simulator, 2) tutorials on using BrainStorm (free Matlab program) including Time-frequency analysis and Source analysis and 3) using Temporal Response Functions to examine cortical brain responses / neural tracking to continuous speech stimuli.

LEARNING OBJECTIVES:

Students will be able to demonstrate how to use BrainStorm for time-frequency and source analysis.

Students will be able to demonstrate the use of Temporal Response Functions to examine cortical brain responses/neural tracking of continuous speech stimuli.

PARTICIPANTS NEED THE FOLLOWING PREPARATION FOR THIS WORKSHOP:

Students should bring their own laptop computer with Matlab installed

Students are encouraged to view the YouTube tutorials (link available when registering) to familiarize themselves with techniques that will be used.