Simulation & Analysis of Deep Brain Stimulation

Christopher R. Butson, Ph.D.
Department of Neurology
Medical College of Wisconsin
Deep Brain Stimulation (DBS): Has been shown to be an effective treatment for movement disorders such as Parkinson’s disease and is being evaluated for a variety of other conditions.

Problem Statement: Despite the clinical effectiveness of DBS, a significant problem has been the titration of stimulation parameters to maximize therapeutic effects and minimize side effects.

Goal: To improve the clinical effectiveness of DBS using a combination of computational modeling and physiological measurements.
Role of CIBC To Date

1. Preliminary results have been generated for motor and neuropsychological outcomes from DBS
2. Proof of concept for use of ImageVis3D (Mobile) to disseminate results to clinicians for individual patients
Role of CIBC To Date

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Representative Atlases of Neuro-psychological Outcomes

Dementia Rating Scale

Wechsler Memory Test - III

Individual Patient Model Rendered in ImageVis3D Mobile
Future Role of CIBC

1. Development of modeling methods to capture a broader range of stimulation protocols and systems
2. Visualization of probabilistic atlases
3. Use of ImageVis3D (Mobile) as a tool to disseminate atlases