Neuromuscular Systems and Neural Engineering Research Lab
School of Electrical & Electronic Engineering
University College Dublin

PhD Opportunity
Closed-loop control of deep brain stimulation for Parkinson's disease

1. Background

Applications are invited for two fully-funded four year PhD positions within the Neuromuscular Systems research group at University College Dublin (UCD) in the area of deep brain stimulation for Parkinson's disease.

Deep brain stimulation (DBS) is an effective therapy for treating the symptoms of Parkinson's disease. In our research group we are working on advanced stimulation protocols to provide more effective control of patient symptoms while addressing the limitations of current DBS systems. We are developing computational models of the central and peripheral nervous system are being developed to better understand how DBS affects the activity of networks of neurons within the brain and neuromuscular system. The models are used in combination with experimental data, including EMG and speech data, to better understand the mechanisms of DBS and to develop new approaches for stimulation.

Applications are invited for two full-time PhD positions in the following areas
(i) Development of computational models of the neuromuscular system and new closed-loop control strategies for DBS
(ii) Recording and analysis of experimental data (EMG, movement and speech data) in patients with DBS.

The Neuromuscular Systems Lab is an international multidisciplinary research group in the School of Electrical and Electronic Engineering at UCD. Our research involves applying engineering principles, in particular mathematical modelling, signal analysis and experimentation, to understand how the nervous system controls muscle in healthy and diseased states. Through this research we aim to improve our understanding of the neuromuscular system to address fundamental questions in the control of human movement and to develop improved therapeutic and rehabilitation strategies.

2. Who Should Apply

Applicants should have, or expect to obtain, a first or upper second class honours Bachelors or Masters degree in Electrical, Electronic or Biomedical Engineering (or a related discipline). Suitable candidates will have a strong interest in biomedical/neural engineering and neuroscience. Excellent analytical, computer and communications skills are essential.

3. Funding

This project is funded by Science Foundation Ireland. Scholarships are funded for four years and cover tuition fees and a tax-free stipend of €22,000 per year. An annual allowance is provided for research consumables and for conference attendance.

4. How to Apply

Please send a cover letter describing your experience and interest in this project (1 page max), CV, and academic transcripts to

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