Motor Task Detection Using Brain Subthalamic Nucleus Local Field Potentials

Soroush Niketeghad, Mohammad H. Mahoor, Adam O. Hebb, Sara J. Hanrahan, Joshua J. Nedrud

**Summary:** An asynchronous behavior detection method to support closed-loop DBS systems

**Description:** Current deep brain stimulation (DBS) devices are open-loop, meaning that the stimulation signal parameters are adjusted by a clinician and fixed for each patient until the next visit. A closed-loop DBS system, which requires the ability to detect asynchronous behavior in real time, can optimize the therapy by modulating the parameters based on the patient behavior. This invention introduces an asynchronous behavior detection method that uses subthalamic nucleus (STN) local field potential (LFP) data, able to detect event and non-event timings.

**Advantages of this Invention:**
- Can be used to design closed-loop DBS devices, which will provide therapeutic effects while adapting to patient conditions, reducing battery usage and eliminating side effects associated with open-loop devices

**Potential Areas of Application:**
- Biomedical

**DU Log Number:** #246

**Intellectual Property Status:** Provisional application filed, #62/263,173

**Opportunity:** We are seeking an investor or strategic partner to license this invention.

For more information contact:
Alexandra Hall, Intellectual Property Manager, Office of Technology Transfer
Mary Reed Building, 222 |2199 S. University Blvd. | Denver, CO 80208 | 303-871-4230 | du.edu