

# **Postdoctoral Fellow – Responsive neuromodulation in humans**

## **Job description**

The Borton Lab at Brown University invites applications for a Postdoctoral Research Associate to help advance our understanding of, and ability to treat, psychiatric disorder in human patients using state-of-the-art neurotechnology and responsive algorithms. The position is located at Brown University main campus in Providence, RI. Competitive salary and the position is available for 1 year with the possibility of extension. The applicant must be eligible to work in the U.S.

## **Project description**

Responsive Deep Brain Stimulation is emerging as a treatment option for mental illness. However, there are no known algorithms for detecting dysfunctional mental states as they arise and evolve in time. We are currently engaged in research projects across a wide variety of mental illnesses in human and animal subjects to elucidate the neurological signatures, and sub-circuits leading to the emergence of psychiatric illness. This call invites candidates with a strong background in neuroscience and computational or electrical engineering to lead a sub-team searching for pathologic mental states.

## **Role of candidate**

The candidate will be involved in lab studies for evaluating neuromodulation in the ventral striatum, sub thalamic nucleus, and other targets in the cortical-striatal-basal ganglia-thalamic-cortical loop. The role requires the candidate to perform data analysis, meta-analysis, data collection, development of control and synchronization tools, and team leadership. Activities may include experimental design, developing custom scripts, statistical data analysis and human participant interaction. Data to be evaluated includes EEG, ECoG, depth LFP, single unit electrophysiology, and behavioral (e.g. task) data. The qualified candidate should have a Ph.D. in Biomedical Engineering, Neuroscience, Biostatistics, or a related field.

## **Applicant Qualifications:**

- Deep knowledge in neuroscience, statistics, and strong sense of scientific curiosity
- Excellent written and verbal communication skills
- A demonstrated publication record
- Proficiency in Julia, MATLAB, or Python
- Desired: experience with neuromodulation hardware

Candidates should have a proven track record in research, should be able to drive research, contribute independently, and be highly motivated to work in a multidisciplinary research group.

**Application Deadline:** Open until filled

**Position Start Date:** ASAP

**How to apply:** Please send the following documents as a single PDF to Prof. David Borton ([daborton@brown.edu](mailto:daborton@brown.edu)) with the subject line “Postdoctoral candidate – your name”

1. Cover letter
2. Complete CV
3. Three or more references

**About the Borton Lab:** The Borton Lab is an interdisciplinary team of researchers focused on the design, development, and implementation of novel neural recording and stimulation systems. The lab currently focuses on designing, developing, and deploying new tools for interrogation of the nervous system across species with a goal of untangling the underpinnings of neuromotor and neuropsychiatric disease and injury. Learn more at <http://borton.engin.brown.edu>. The lab is supported by the International Foundation for Research in Paraplegia (IRP), the Defense Advanced Research Projects Agency (DARPA), the National Institute for Neurological Disease and Stroke (NINDS), the National Institute for Mental Health (NIMH), Draper, Medtronic, and the Department of Veterans Affairs (PVAMC) Center for Neurorestoration and Neurotechnology (CfNN).

# Postdoctoral Fellow – Spinal information processing

## Job description

The Borton Lab at Brown University invites applications for a Postdoctoral Research Associate to help advance our understanding of information processing in the spinal cord. The position is located at Brown University main campus in Providence, RI. Competitive salary and the position is available for 1 year with the possibility of extension. The applicant must be eligible to work in the U.S.

## Project description

We are building an Intelligent Spine Interface (ISI) capable of reading and writing simultaneously to, and from, the spinal cord. This call invites candidates with a strong background in neuroscience, computational or electrical engineering to lead a sub-team collecting and interpreting spinal electrophysiology.

## Role of candidate

The role requires the candidate to perform data analysis, meta-analysis, data collection, development of control and synchronization tools, and team leadership. Activities may include experimental design, developing custom scripts, statistical data analysis as well as animal and human participant interaction. Data to be evaluated includes EEG, ECoG, single unit electrophysiology, and behavioral (e.g. task) data. The qualified candidate should have a Ph.D. in Biomedical Engineering, Neuroscience, Biostatistics, or a related field.

## Applicant Qualifications:

- Deep knowledge in neuroscience, statistics, and strong sense of scientific curiosity
- Excellent written and verbal communication skills
- A demonstrated publication record
- Proficiency in Julia, MATLAB, or Python
- Strong background in electrophysiology (in vivo; ideally spinal electrophysiology)
- Experience with neuromodulation hardware

Candidates should have a proven track record in research, should be able to drive research, contribute independently, and be highly motivated to work in a multidisciplinary research group.

**Application Deadline:** Open until filled

**Position Start Date:** March 1, 2019

**How to apply:** Please send the following documents as a single PDF to Prof. David Borton ([daborton@brown.edu](mailto:daborton@brown.edu)) with the subject line “Postdoctoral candidate – your name”

1. Cover letter

2. Complete CV
3. Three or more references

**About the Borton Lab:** The Borton Lab is an interdisciplinary team of researchers focused on the design, development, and implementation of novel neural recording and stimulation systems. The lab currently focuses on designing, developing, and deploying new tools for interrogation of the nervous system across species with a goal of untangling the underpinnings of neuromotor and neuropsychiatric disease and injury. Learn more at <http://borton.engin.brown.edu>. The lab is supported by the International Foundation for Research in Paraplegia (IRP), the Defense Advanced Research Projects Agency (DARPA), the National Institute for Neurological Disease and Stroke (NINDS), the National Institute for Mental Health (NIMH), Draper, Medtronic, and the Department of Veterans Affairs (PVAMC) Center for Neurorestoration and Neurotechnology (CfNN).