Samantha Sun

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Education

University of Washington, Seattle, WA — since 2018
Doctor of Philosophy, Bioengineering

University of Washington, Seattle, WA — 2014 – 2018
Bachelor of Science, Bioengineering (Honors)

Experience

Graduate Research Assistant | University of Washington, Seattle, WA — since 2018

- Designed and performed experiments to electrically stimulate the brain with invasive electroencephalography to understand and build models of neural stimulation response
- Applied modern computational tools to characterize different brain states, such as sleep and wake, and identify neural features relevant for behavioral brain state classification
- Currently investigating interactions between underlying brain state and electrical stimulation to design neurostimulation methods that are responsive to underlying neural activity

Biomedical Research Intern | Physio-Control, Redmond, WA — 2018

- Evaluated a method to isolate motion artifact from the impedance signal collected during CPR chest compressions, with the goal of providing real-time chest compression feedback
- Designed and tested benchtop circuit models and experimental protocols in an animal model

Brain-Computer Interface Hackathon | IEEE SMC Conference, Banff, Canada — 2017

- Integrated novel technology and supplies on-hand to design, build, and present a neural engineering solution for increased prosthetic control over a span of 48 hours (awarded team)

Neural Tech Studio Design Class | Center for Neurotechnology, Seattle, WA — 2017

- Designed and prototyped a wearable device that integrates EMG and galvanic skin response to quantify real-time anxiety, which triggers a meditative breathing light with increased anxiety

Relevant Skills

- Fluency in signal processing of neural electrophysiology, including noise cleaning, artifact removal, time-based analyses, and frequency filtering methods, in MATLAB and Python
- Working knowledge of the PyTorch machine learning library
- Familiarity with finite element modeling with COMSOL
- Familiarity with real-time signal processing in LabView

Publications

1. **S. Sun**, L. P. Jiang, S. M. Peterson, J. Herron, K. Weaver, A. Ko, J. Ojemann, R. P. N. Rao. "**Unsupervised Sleep and Wake State Identification in Long-Term Electrocorticography Recordings**," 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society

2. C. L. Mac Donald, J. Barber, J. Wright, D. Coppel, N. De Lacy, S. Ottinger, S. Peck, C. Panks, **S. Sun**, K. Zalewski, N. Temkin. "**Longitudinal Clinical and Neuroimaging Evaluation of Symptomatic Concussion in 10- to 14-Year-Old Youth Athletes**," J Neurotrauma. 2019 Dec 27