William G. Coon, PhD

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Education

Harvard Medical School	*Boston, MA, USA*
T32 Research Training Program in sleep, circadian and respiratory neurobiology	2019
State University of New York at Albany	*Albany, NY, USA*
PhD, Biomedical Sciences: Neuroscience	Sep 2015

- Distinguished Doctoral Dissertation Award

McGill University, Faculty of Science	*Montreal, QC, Canada*
BSc, Psychology and Neuroscience	May 2007

Leadership & Mentoring

g.tec neurotechnology USA, Inc. | g.tec medical engineering — *Albany, NY*
Division Head, Research Engineer — Sep 2015-Jan 2017

- Directed the establishment and operation of the new US subsidiary of g.tec medical engineering GmbH
- Principal project worked on FDA 510(k) approval for the first commercially available real-time intraoperative brain mapping system ("CortiQ")
- Organized dozens of international speaker panels, conferences, and workshops on brain-computer interface (BCI) and EEG/ECoG signal processing

National Center for Adaptive Neurotechnologies | New York State Department of Health — *Albany, NY*
Visiting Scholar and PhD Candidate — Aug 2010-Jan 2017

- Mentored visiting professor on 1-year project analyzing signal processing approaches
- Mentored two undergraduate honors research projects on theoretical neuroscience

Brown University | Bradley Hospital Sleep Research Laboratory — *Providence, RI*
Senior Research Technologist — May 2007-Aug 2010

- Directed training and supervision of 12 undergraduate research assistants and 3 team leaders, annually, for ongoing research project on human chronobiology

Teaching Assistant

- Brown University undergraduate courses on sleep and chronobiology

Research

Neural Signals Engineer | Johns Hopkins Applied Physics Lab — *Laurel, MD* — Nov 2019 - present

- Principal project developing "hybrid sensing" BCI: simultaneous fNIRS+EEG for real-time applications
- Implementation of shallow convolutional networks to decode hybrid sensing BCI for real-time "AI-BCI"
- AI neural smithing for classification of sleep states from electrophysiological (EEG) time series

Postdoctoral Fellow | Massachusetts General Hospital & Harvard Medical School — *Boston, MA* — Feb 2017 – Nov 2019

- Harvard Medical School Neal Alan Mysell Award for Psychiatric Research finalist
- Principal project using machine learning and artificial intelligence (AI) on intracranial EEG signals to identify signatures of memory consolidation during sleep
- Collaborations with MIT Picower Institute for Learning & Memory to study physiology of sleep & memory systems

Research Engineer | g.tec neurotechnology — *Albany, NY* — Sep 2015-Jan 2017

- Large portfolio of work including nonivasive BCI for rehabilitation (e.g., stroke), communication, and control
- Developed framework for identifying the location of implanted brain signal sensors and visualizing their output
- Prototyped system to map receptive language areas in real-time on anesthetized patients in the operating theater

PhD Candidate | State University of New York — *Albany, NY* — Sep 2010-Sep 2015

- Developed statistical framework for charting the spatiotemporal evolution of brain activity in single trials
- Extensive experience working with clinical staff in hospital settings to collect electrocorticographic (ECoG) data

Skills and Interests

CS/Programming:	MATLAB, Python, Javascript, Pytorch, Keras, HTML5, BCI2000, C/C++, Qt, bash shell, tc shell; AWS (Amazon Web Services) for GPU-accelerated Keras+TensorFlow/PyTorch ML/AI on p2.xlarge w/ NIVIDA Tesla K80 LaTeX, GIMP, freesurfer, MNE, Osirix, SPM, Chronux, FieldTrip, EEGLab, Office, Photoshop, Illustrator, UNIX/Linux, macOS, Windows
Modeling/Classif.:	Regression, linear/linear mixed effects models and GLMs, convolutional neural networks, deep nets, SVMs, LDA, clustering, component analysis (PCA/ICA), nonparametric statistical approaches, time series analysis statistics (bootstraps, permutation tests), maximum likelihood, mutual information, reinforcement learning
Imaging/ePhys.:	MRI, CT, EEG, PSG (EEG+EOG+EMG), iEEG/ECoG, LFPs, MEG, fNIRS, PSG sleep staging (R&K+AASM criteria)
Interests:	Sleep Science, Artificial Intelligence, Brain-computer interfacing, ECoG, Data Visualization, Teaching