

# Laura Dubreuil-Vall

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## EDUCATION

### HARVARD UNIVERSITY | UNIVERSITY OF BARCELONA

PHD CANDIDATE, NEUROSCIENCE  
2015-2020 (expected)

PhD program on the use of non-invasive brain stimulation techniques to improve cognitive functions, and the use of deep learning techniques to diagnose clinical populations and study brain dynamics, under the supervision of Dr. Joan Camprodon.

### POLYTECHNIC UNIVERSITY OF CATALONIA (UPC)

BS AND MSc IN  
TELECOMMUNICATIONS  
ENGINEERING

2006-2011

Ranked first student of the class out of 200 students. Courses included subjects in computer science, electrical engineering, linear algebra and physics.

## CODE SKILLS

Python • Matlab • SQL • R •  $\LaTeX$

## AWARDS

2019 - Women in STEM, National Spanish award

2011 - AGAUR national grant for academic excellence

2005 - Caixa Manresa award for academic excellence

## COURSEWORK

Computational Neuroscience, U.W.  
Deep Learning, Udacity nanodegree  
Introduction to Deep Learning, MIT  
Machine Learning, Stanford University

## BOOK CHAPTERS

• A. Albajes-Eizagirre, L. Dubreuil-Vall, et al. Quantitative EEG for brain-computer interfaces. In "K. Nidal and A.S. Malik, editors. EEG/ERP Analysis: Methods and Applications", chapter 7, pages 157-171. CRC Press, 2017.

• L. Dubreuil-Vall.  
Electroencephalography (EEG). In "Principles of Neuroimaging. Guide to the clinic and research", Editorial Médica Panamericana, in press.

## EXPERIENCE

### NEUROELECTRICS | RESEARCH SCIENTIST

Cambridge, MA (US)

September 2014-Present

- Designed a deep learning system based on brain signals to predict what patients will develop Parkinson's disease 6 years in advance with 88% accuracy.
- Improved the robustness of a wearable medical device for EEG recording and non-invasive brain stimulation by reducing the effect of external interferences.
- Lead the expansion of the company to the US, creating a new team and generating more than \$3M revenues.

### HARVARD MEDICAL SCHOOL | VISITING PHD FELLOW

Boston, MA (US)

September 2015 - Present

- Designed an experimental and quantitative analysis framework of behavioral and physiological data for the extraction of biomarkers for ADHD using deep learning techniques, statistical analysis and signal processing.
- Created a pipeline to extract meaningful physiological features for the neuromodulation of executive functions in healthy and ADHD populations.
- Published 2 book chapters and more than 10 peer-reviewed publications in high-impact medical journals such as Brain Stimulation and Frontiers in Neurology.

### STARLAB | RESEARCH ENGINEER IN NEUROSCIENCE

Barcelona, Spain

July 2012 - August 2014

- Clinical research on the use of non-invasive brain stimulation techniques and design of EEG-based Brain-Computer Interfaces (BCI) for medical applications.

### ERNST & YOUNG | CONSULTANT IN LIFE SCIENCES

Barcelona, Spain

October 2011 - April 2012

- Strategic and management consulting in life sciences industries, including biotechnology, healthcare, pharma and medical devices.

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) |

RESEARCH SCHOLAR

Cambridge, MA (US)

February 2011 - August 2011

- Design of an underwater acoustic video transmission system under the supervision of Dr. Chryssostomos Chryssostomidis.

### INSTITUTE OF PHOTONIC SCIENCES (ICFO) | INTERN

Barcelona, Spain

July 2009 - September 2009

- Explore fundamental aspects of quantum theory to enable the implementation of applications requiring specific types of quantum light.

## SELECTED PUBLICATIONS

- [1] L. Dubreuil-Vall, P. Chau, G. Ruffini, A. S. Widge, and J. A. Camprodon. tdcS to the left dlPFC modulates cognitive and physiological correlates of executive function in a state-dependent manner. *Brain Stimulation*, 2019.
- [2] L. Dubreuil-Vall, G. Ruffini, and J. Camprodon. A deep learning approach with event-related spectral eeg data in attention deficit hyperactivity disorder. *medRxiv*, 2019.
- [3] G. Ruffini, D. Ibanez, M. Castellano, L. Dubreuil-Vall, A. Soria-Frisch, R. Postuma, J.-F. Gagnon, and J. Montplaisir. Deep learning with eeg spectrograms in rapid eye movement behavior disorder. *Frontiers in Neurology*, 10:806, 2019.