Daniel Carbonero

EMAIL: dcarbo@bu.edu

BIOMEDICAL ENGINEERING, MACHINE LEARNING, NEUROSCIENCE

WEBSITE: dannycarbonero.github.io

Graduate Research Assistant
Neuronal Dynamics Lab – Department of Biomedical Engineering at Boston University
Supervisor: **John White PhD**
March 2020 – Present

- Develop and adapt dimensionality reduction (DR) machine learning methods for rigorous neuronal network dynamic analyses recorded using calcium imaging under various neural contexts.
- Design analysis pipeline for rigorously characterizing neuronal network dynamics under: increasing concentrations of anesthetic sedation, and natural and artificial memory recall.

Associate Engineer
Bio-Vitro Incorporated
Supervisor: **Siddarth Rawal MD**
May 2019 – August 2019

- Optimized design of previously constructed fluid handling platform for automated cell culture and cell signaling analysis under physiological conditions for production and sending to collaborating labs.
- Supported/troubleshot collaborators with use of produced platforms.

Undergraduate Research Assistant
Duke University Research Experience for Undergraduates – Neurological Prosthesis Laboratory
Supervisor: **Warren Grill PhD**
May 2018 – August 2018

- Modified and completely automated a fully computational, Deep Brain Stimulation, Parkinson's Disease (PD) Neurological model to use experimentally recorded data as inputs.
- Modeled PD in rat brain using upstream, experimentally recorded, neuron firing as input to simulate, characterize, and analyze downstream Thalamus function and activity to assess effectiveness of Deep Brian Stimulation as treatment for PD.

Undergraduate Research Assistant
Physiomimetic Microsystems Laboratory – Biomedical Nanotechnology Institute at the University of Miami (BioNIUM)
Supervisor: **Ashutosh Agarwal PhD**
May 2017 – May 2019

- Developed automated pipelines for microscope image data acquisition, processing, and analysis.
- Wrote front-end software to allow end user to easily process and analyze images.
- Designed, prototyped, and manufactured an integrated and automated platform for continuous cell culture and dynamic cell secretion analysis of microphysiological systems.

Student Analyst
Division of Continuing and International Education at the University of Miami
Supervisor: **Magaly Abreu**
January 2017 – May 2017

- Developed early iteration of real-time, self-updating student database to ease pulling of information.
- Created financial reports to present data more clearly and concisely.

EDUCATION

Boston University
Expected Doctor of Philosophy in Biomedical Engineering (2024)

Boston University
Master of Science in Biomedical Engineering (August 2022)

University of Miami
Bachelor of Science in Biomedical Engineering (May 2019)
GPA: 3.8, Cum Laude
Provost's Honor Roll, Dean's List, President's Scholarship

SKILLS
Programming: Highly Proficient in: Python, MATLAB.
Comfortable with: HTML, CSS, R. Familiar with: C, C++, Java
Engineering Design: CAD, SOLIDWORKS, Rapid Prototyping
Software: Arduino IDE, COMSOL Multiphysics, ImageJ
Document Preparation: Microsoft Office, Adobe Illustrator
Certifications: Six Sigma Green Belt
Languages: Native in Spanish, fluent in English

HONORS AND AWARDS
NSF Research Traineeship Program Understanding the Brain: Neurophotonics Trainee
NIH Translational Research in Biomaterials Training Grant Trainee
University of Miami College of Engineering Senior Design Industry Impact Award
Alpha Eta Mu Beta - National biomedical engineering honor society
Omicron Delta Kappa Honor Society - National leadership honor society
Tau Beta Pi Honor Society -National engineering honor society