

# Daniel Carbonero

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ENGINEERING, MACHINE LEARNING. NEUROSCIENCE

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## 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) statistical techniques for analyzing neuronal network dynamics recorded using calcium imaging under various neural contexts.
- Design pipeline for 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 previously constructed fluid handling platform for automated cell culture and cell signaling analysis under physiological conditions to be built and sent to collaborating labs.
- Assisted/troubleshoot collaborators with use of their platform.

## Undergraduate Research Assistant

Duke University Research Experience for  
Undergraduates - Neurological Prosthesis  
Research Laboratory

Supervisor: Warren M. Grill PhD

May 2018 - August 2018

- Modified and completely automated fully computational, Deep Brain Stimulation, Parkinsonian Neurological model for input of experimentally recorded data.
- Modeled Parkinson's in rat brain using experimental neuronal firing as input to simulate, characterize, and analyze Thalamus firing function to assess effectiveness of Deep Brain Stimulation as treatment for Parkinson's.

## Undergraduate Research Assistant

Physiometric 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 user to easily process and analyze images.
- Designed and manufactured an integrated, automated, platform for continuous cell culture and dynamic cell secretion analysis of microphysiological systems.

## Student Analyst

Division of Continuing & International  
Education

Supervisor: Magaly Abreu

January 2017 - May 2017

- Developed early iteration of real-time, self-updating student database to ease pulling of information.
- Wrote financial reports to present data in a more clear and efficient matter.

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## EDUCATION

### Boston University

Expected Doctor of Philosophy in  
Biomedical Engineering (2024)

### Boston University

Masters of Science in Biomedical  
Engineering (August 2022)

### The University of Miami

Bachelor of Science in Biomedical  
Engineering (May 2019)

GPA: 3.8

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 (3D printing, laser cutting, etc.)

**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 Fellow

2019 University of Miami Senior Design Expo Industry Impact Award

Alpha Eta Mu Beta (BME Honor Society)

Omicron Delta Kappa (Leadership Honor Society)

Tau Beta Pi (Engineering Honor Society)