

# Paul Camacho

PhD Student in Neuroscience  
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## Education

**University of Illinois at Urbana-Champaign (UIUC)**, Urbana, Illinois USA

Ph.D. Student, Neuroscience, 2018 to 2023 (expc.)

B.S., Molecular and Cellular Biology, 2017

## Academic Employment

**University of Illinois at Urbana-Champaign & Carle Foundation Hospital**, Urbana, IL USA

Data Engineer & Data Scientist, Carle-Illinois Advanced Imaging Center, 2021 - Present

- Developed container-based reproducible neuroimaging processing pipelines for multi-method analysis of multiple modalities of ultra-high-field 7 Tesla MRI
- Assisted in scan protocol design for the Champaign-Urbana Population Study by testing sequences for effects on quality control and connectivity measures
- Co-authored a manuscript on data-driven resting-state fMRI functional connectivity analysis in multiple sclerosis (currently in submission process)

**University of Illinois at Urbana-Champaign**, Urbana, IL, USA

Graduate Research Assistant, Magnetic Resonance Functional Imaging Laboratory, 2020 - Present

- Automated high-performance computer cluster-based processing pipelines for MRI data analysis of structural and resting-state functional connectivity using in-house and open-source BIDS App Docker and Singularity containers
- Contributed to development of open-science software toolkits for CUDA acceleration of quantitative analysis of macro- and micro-structural measures
- Implemented reproducible neuroimaging analysis practices in data processing report generation and use of BIDS and ReproIn naming conventions in the Biomedical Imaging Center at the Beckman Institute for Advanced Science & Technology
- Led an undergraduate research assistant through developing an automated visual statistical report system for study quality control and site monitoring
- Provided computational environment support for multi-site collaborations designing methods for improving surgical planning for glioma and refractory epilepsy

Graduate Student, Neuroscience of Dance in Health and Disease (NDHD) Laboratory, 2018 - 2020

- Co-authored proposals for an NMSS Pilot Grant and Research Grant
- Acquired, processed, and analyzed sEMG, motion capture, and MRI data
- Adapted a processing pipeline for MRI data analysis of structural and resting-state functional connectivity to include cerebellar lobule parcellations

Graduate Mentor, International Graduate Mentors Program & NDHD Laboratory, 2020

- Aided in leading and performing a systematic review of exercise- or motor learning-induced changes in brain connectivity conducted with two international graduate students
- Supervised review analysis and taught MRI visualization tool usage

Research Assistant, Neuroscience of Dance in Health and Disease Laboratory, 2016 - 2018

- Co-authored an NCCIH R01 proposal on the potential neural mechanisms of clinical improvements seen after targeted ballet training for persons with multiple sclerosis.
- Acquired and processed eye tracking and sEMG data for studies in healthy aging and Parkinson's disease
- Assisted in preparing IRB applications and clinical trial registration

## **Distinction**

R25 Training in Advanced Statistical Methods in Neuroimaging and Genetics, University of Utah, 2022

National Institute on Neurological Disorders and Stroke (R25NS117281) funded course for advanced statistical methods aimed at biomarker discovery.

Global Young Scientists Summit Attendee, National Research Foundation, Prime Minister's Office, Singapore, 2022

Selected to network with other STEM graduate students and postdoctoral researchers around the world, along with Nobel Prize, Fields Medal, and Millenium Prize winners.

Graduate College Distinguished Fellowship, UIUC, 2018-2021

Recruitment fellowship

Neuroscience Spirit Award, Neuroscience Program at UIUC, 2021

Award for the embodiment of a well-rounded positive attitude and spirit in education, research, outreach, volunteerism, unity, diversity, socialization, and honor.

## **Academic Service**

### **Graduate Student Advisor**

Undergraduate Neuroscience Society, University of Illinois at Urbana-Champaign 2018 - Present

Organized a series of monthly guest lectures for the Undergraduate Neuroscience Society by graduate students, post-doctoral students, and faculty from multiple universities.

Guided students through a grant writing exercise that resulted in securing funding for members of the Undergraduate Neuroscience Society to attend the annual meeting of the Society for Neuroscience.

### **Neuroscience Program Undergraduate Research Liaison**

Neuroscience Program, University of Illinois at Urbana-Champaign 2018 - Present

Created and maintained an open list of laboratories seeking applicants for undergraduate research assistants to increase equity of access to research experience.

Organized undergraduate involvement in Brain Awareness Day - a community event designed to inspire local youth to pursue STEM careers.

## Professional Membership

Society for Neuroscience (2018-Present)

International Society for Magnetic Resonance in Medicine (2020-Present)

## Publications

Camacho, P.B., Carbonari, R., Shen, S., Zadikoff, C., Kramer, A.F. and López-Ortiz, C., 2019. Voluntary saccade training protocol in persons with Parkinson's disease and healthy adults. *Frontiers in aging neuroscience*, 11, p.77.

Camacho, P.B., Sutton, B.P. and Lopez-Ortiz, C., 2021. Brain connectivity and motor improvements after ballet intervention in multiple sclerosis: pilot. medRxiv.

Nair, G., Nair, S.S., Arun, K.M., Camacho, P.B., Bava, E., Ajayaghosh, P., Menon, R.N., Nair, M. and An-teraper, S.A., 2021. Resting state functional connectivity in relapsing remitting multiple sclerosis with mild disability—a data driven, whole brain multivoxel pattern analysis study. bioRxiv. \*In Submission to Brain Con-nectivity\*

## Invited Talks & Presentations

**ISMRM Poster**, “Automating Reproducible Connectivity Processing Pipelines on High Performance Com-puting Machines,” International Society for Magnetic Resonance in Medicine, May 2021.

**University of Illinois Undergraduate Neuroscience Society Lecture**, “Network Theory: Analyzing MRI-Based Brain Connectivity” March 2021.

**Invited Lecture**, “MRI: Kinesiology and Neuroscience,” Kinesiology 201 - University of Illinois at Urbana-Champaign, November 2019.

**SfN Poster**, “Voluntary saccade training of large amplitudes in healthy older adults yields bilateral changes in latency and kinematics,” Society for Neuroscience, October 2019.

**Neuroscience Program Pre-SfN Night Poster**, “Voluntary saccade training of large amplitudes in healthy older adults yields bilateral changes in latency and kinematics,” Society for Neuroscience, October 2019.

**Illinois MS Research Day Poster**, “Ataxia rehabilitation in multiple sclerosis through a targeted dance class” April 2019.

**University of Illinois Undergraduate Neuroscience Society Lecture**, “The Neuroscience of Dance” Febru-ary 2019.

**SfN Poster**, “Voluntary saccade training in healthy adults,” Society for Neuroscience, November 2018.

**Neuroscience Program Pre-SfN Night Poster**, “Voluntary saccade training in healthy adults,” Society for Neuroscience, November 2018.

**University of Illinois Undergraduate Neuroscience Society Lecture**, “Serotonergic psychedelics and their use in treatment of depression and anxiety in late-stage fatal diseases” September 2018.

## Computer Skills

Programming: HTML5, JavaScript, CSS3, R, Python, Bash

Applications: MATLAB, FSL, EMGWorks, Qualisys, EndNote, Docker, Singularity, Git, Google Cloud Plat- form

Platforms: Windows, RHEL, Darwin, Ubuntu, Debian, Bright

## Language

Native English

## References

- Dr. Brad Sutton**, Professor, Dept. of Bioengineering,  
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- Dr. Sanmi Koyeo**, Associate Professor, Dept. of Computer Science,  
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- Dr. Sepideh Sadaghiani**, Assistant Professor, Dept. of Psychology,  
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- Dr. Manuel E. Hernandez**, Assistant Professor, Dept. of Kinesiology & Community Health,  
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- Dr. Citlali López-Ortiz**, fmr. Assistant Professor, Dept. of Kinesiology & Community Health,  
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