

Alexander Cates

PhD Student

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Personal Profile

Neurological function underlies all forms of human performance. Whether it is movement, sensory, or general cognition, everything starts with the brain. Despite its importance, much is still unknown about how these functions are accomplished or, more importantly, how we can improve them. I use a combination of neuroimaging and neuromodulation techniques to improve neurological function in healthy populations and to treat neurological conditions in clinical populations. My current research focuses on understanding the interaction between gaze behavior and gait during locomotor learning in healthy and clinical populations.

Education

Northwestern University

PhD. Student, Neuroscience, 2018 - Current

Studying gaze behavior and motor learning under Dr. Keith Gordon at the Human Agility Lab

Hamilton College

B.A., Neuroscience (minor Mathematics), 2011 - 2015

Thesis: Beauty is in the mood of the beholder: Positive affect alters the neural responses to facial attractiveness

Research Experience

Graduate Student Researcher at Human Agility Lab, Northwestern University

2019 - Current

My research examines how the role of vision changes with differing level of motor skill (both elite, healthy and clinical populations). By recording where people look and modulating what visual information is available during a sequence learning task, I am quantifying how the role of vision changes, both for controlling foot placement accuracy during walking and finger coordination in an online video game.

Graduate Student Researcher at Searle Teaching as Research Program, Northwestern University

2020 - 2020

Conducted a research project on how natural language processing can provide additional insights into course evaluation comments

Senior Research Associate at Halo Neuroscience

2015 - 2018

Halo Neuroscience designs innovative and beautiful pieces of neural stimulation technology. By priming certain areas of the brain we are able to enhance brain function in a number of different areas. At Halo I: Designed and ran clinical trials with healthy (average and elite athletes) and clinical (stroke) populations, Organized and advised independent researchers on the use of neural stimulation, wrote 3 papers (published/in submission) and 2 grant applications, Designed and analyzed a data analytics system to glean customer information from support interactions

Undergraduate Researcher at Hamilton College

2013 - 2015

As an undergraduate researcher at Hamilton I: Designed and ran an original experiment centered on whether mood states affect how the brain perceives the world on a neurological level, Collaborated with students and professors on multiple projects such as: working with a prototype brain imaging device, Fitts law, Implicit associations

Teaching Experience

TAing at Northwestern University

2020 - 2020

TAed 2 graduate level classes, including leading lectures on Matlab programming, Signal Processing, and Data Visualization.

CIRTL Programming at Northwestern University

2019 - 2020

Completed the mentored discussions in teaching program (winter 2019), the MOOC/MCLC on teaching stem to undergraduates (Summer 2019), and the Searle Teaching as Research program (spring 2020).

Basketball Coach at JCCSF and Wilmette Park District

2015 - 2020

Coached youth (4th through 6 grade boys and girls) basketball each winter, have done so in San Francisco with JCCSF (3 years) and more recently with the Wilmette Park District since starting at Northwestern.

Introduction to Pandas at Northwestern University

2019 - 2019

Designed and taught a 3-hour workshop on how to use the python package Pandas to process and analyze different types of data.

Publications

Using Natural Language processing to understand student course evaluations

Assessment and evaluation in higher education. (in prep), 2021

Cates A, Woods L, and Linsenmeier R

Gaze Behavior changes during Locomotor learning

Journal of Neurophysiology (in prep), 2021

Cates A and Gordon, K

tdcs and tinnitus: A meta analytic exploration into efficacy and optimization

MetaRxiv (Preprint), 2020

Cates, A and Davies, E

Positional accuracy of scalp electrodes mounted on a ready-made band targeting motor cortex

Brain Stimulation, 2017

Lin R, Cates A, Bar-Or T, and Wingeier, B

Presentations

Gaze behavior changes from step to step based on motor performance during walking

Dynamic Walking (Poster), 2020

Cates, A. and Gordon, K

Gaze Behavior changes following motor learning in a gait training task

Neuromatch 3.0 (Talk), 2020

Cates, A. and Gordon, K

Repeated sessions of transcranial direct current stimulation (tDCS) with vertical jump training improves vertical jump performance in elite athletes

North American Neuromodulation Society (Poster), 2019

Cates A, Lin R, Mayberry A, Clark R, Chao D, Taylor T, Stray-Gundersen J, and Wingeier B

Effects of transcranial direct current stimulation over the motor cortex on isometric rate of force development

NANS Summer Series (Poster), 2018

Lin R, Cates A, Bar-Or T, and Wingeier B

Awards

Gaze behavior during locomotor learning

NSF GRFP Honorable Mention, 2020

This resume was generated using a custom python script.

Source code is available at my GitHub: https://github.com/zanderman12/resume_builder