

Mrunal Zambre

208 N Homewood Ave, Apt B3, Pittsburgh, PA 15208 | (612) 772-6597 | mrz30@pitt.edu

Education

University of Pittsburgh 2022 - Present

Ph.D. Neuroscience

Advisors: Dr. Helen Schwerdt & Dr. Aaron Batista

University of Minnesota - Twin Cities 2016 - 2020

B.S. Neuroscience (*Computer Science Minor*)

GPA: 3.867; Major GPA: 3.89

Dean's List (5 out of 8 semesters)

Research & Professional Experience

Graduate Student Researcher, University of Minnesota Twin Cities August 2022 - Present

PI: Helen Schwerdt, Aaron Batista

- *Studying the effects of reward on motor behavior through a brain-computer interface*

Researcher 1, University of Minnesota Twin Cities July 2020 - July 2022

PI: Jan Zimmermann, Ben Hayden

- *Addiction Connectome: Studying functional connectivity dynamics through chronic cocaine addiction using fMRI to develop a comprehensive and public database*
 - Designed lever-pressing apparatus for non-human primate (NHP) cocaine self-administration
 - Developed drug administration schedule that mimics human drug consumption habits
 - Trained NHP on pole-chairing, lever-pressing, and self-administration schedules
 - Assists in research design, MRI image acquisition, vascular-access port surgery
- *OpenMonkeyStudio: Deep-learning based automated markerless pose estimation and studying NHP decision making and spatial cognition in a naturalistic context*
 - Conducts maintenance of free-range enclosure and hardware-software platform involving 62 cameras to capture freely-moving behavior of macaques
 - Conducts daily data collection via wireless electrophysiology and capturing of free-moving behavior

Undergraduate Research Assistant, University of Minnesota May 2019 - May 2020

PI: Jan Zimmermann

- *Ultra-high field (10.5 Tesla) resting-state fMRI in the macaque*
 - Conducted image preprocessing using FSL, AFNI (software for analyzing functional MR images)
 - Conducted group-ICA and single-subject ICAs to categorize 30 resting-state networks

Undergraduate Research Assistant, University of Minnesota May 2019 - Dec 2019

PI: Anna Zilverstand

- *Establishing neurological subtypes in different addicted human populations*

- Coded PsychoPy toolbox-based behavioral tasks for human subjects: stop-signal rating task, gambling task, and a rating task in response to pictures that trigger cravings
- Developed tasks to be compatible with simultaneous functional MR image acquisition and TTL I/O system for physiological recordings

Undergraduate Researcher, DIS Copenhagen

Spring 2019

Cognitive Neuroscience of Consciousness Lab

(Poster at DIS Research Poster Symposium 2019)

- *Unconscious Inhibitions: Using the Stroop Effect & Shape Priming*
 - Implemented the Stroop effect in a E-Prime paradigm with stimuli comprising of two shapes, one smaller shape repeated to form another overall shape (e.g. circle made of triangles)
 - Collected human participants' responses to identifying the overall large shape and the smaller repeating shape
 - Conducted ANOVA and t-tests using IBM SPSS to determine if primer shapes affect the accuracy and reaction times of participants' responses
 - Identified potential effects of negative compatibility effect on participants' unconscious processing of primes and motor inhibitions

Peer Tutor, SMART Learning Commons, University of Minnesota

Aug 2017 - Dec 2018

- Supported undergraduate students in calculus, physics, chemistry (inorganic and organic), and computer science by focusing on concepts and problem-solving tools

Publications

Journal Articles

Benjamin Voloh, David J-N Maisson, Roberto Lopez Cervera, Indirah Conover, **Mrunal Zambre**, Benjamin Hayden, Jan Zimmermann. "*Hierarchical action encoding in prefrontal cortex of freely moving macaques.*" Cell Reports. September 2023.

David J-N Maisson, Roberto Lopez Cervera, Benjamin Voloh, Indirah Conover, **Mrunal Zambre**, Jan Zimmermann, Benjamin Y Hayden. "*Widespread coding of navigational variables in prefrontal cortex.*" Current Biology. August 2023.

Posters

Mrunal Zambre, Allyson Smith, Tyler Araquistain, Maddison Lotstein. "*Congruent Priming: Friend or Foe?*" DIS Research Poster Symposium, Copenhagen, Denmark. May 2019.

Mrunal Zambre, Quan Lei, Gordon Legge. "*Evaluating the Visual Accessibility of Stairs in Public Spaces.*" Undergraduate Research Symposium, Minneapolis, MN, USA. May 2018.

Extracurricular Activities

Captain , Dhoom Dance Crew, University of Minnesota	Aug 2019 - May 2020
Staff Photographer , Minnesota Daily, University of Minnesota	Aug 2019 - Dec 2020

Awards & Honors

College of Biological Sciences Dean's List , University of Minnesota	Fall 2016 - Fall 2017 Fall 2018 - Spring 2019
Gold Global Excellence Scholarship , University of Minnesota	Fall 2016 - Spring 2020
Undergraduate Research Scholarship , University of Minnesota	Spring 2017