

Jacob Wheelock

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Education

Georgia Institute of Technology

August 2023 – Ongoing Atlanta, GA

- Ph.D. Student in the Bioengineering Program
- Home School in Electrical and Computer Engineering

Washington University in St. Louis

August 2019 – May 2023 St. Louis, MO

- B.S. in Electrical Engineering, Valedictorian
- Minors in Computer Science & Robotics
- Grade-Point Average: 4.00 (on a scale of 4.00)

Research Experience

Lu Fluidics Group

August 2023 – Ongoing Georgia Institute of Technology

- Conducting research on efficient neural learning mechanisms using *C. elegans*, analyzing neural activity shifts during adaptive behavior to inform energy-efficient machine learning models.
- Developed a pipeline to track posture and quantify movement patterns, presented at CENeuro 2024, providing critical behavioral data to support research in neural dynamics. [Presented at CeNeuro 2024]

Brain Dynamics and Control Research Group

January 2022 – July 2023 Washington University in St. Louis

- Developed a real-time transcranial current stimulation (tCS) system using Arduino and Ubuntu to ensure precise timing for adaptive, task-based stimulation. [Link]
- Presented findings at NER 2023, showcasing a closed-loop neural stimulation approach for adaptive neural modulation. [Presented at IEEE NER 2023]

Stream-Based Supercomputing Lab

January 2021 – April 2022 Washington University in St. Louis

- Optimized a gamma-ray burst localization algorithm using custom CUDA kernels, achieving a threefold speed increase to meet real-time requirements for a space telescope application.
- Presented at IEEE Supercomputing 2021, demonstrating GPU-based parallel processing techniques for efficient astrophysical data analysis. [Link]

Publications

Supporting Multi-messenger Astrophysics with Fast Gamma-ray Burst Localization

https://ieeexplore.ieee.org/document/9651308

Honors/Awards

President's Fellowship

March 2023

Georgia Institute of Technology

- A highly competitive fellowship awarded to the top 5% of Ph.D. candidates at Georgia Tech. Recognizes academic excellence and innovation, supporting high-impact research with real-world applications.

InQuBATE Fellowship

August 2024

Georgia Institute of Technology

- NIH-funded fellowship awarded to Ph.D. researchers in the top 10% focused on quantitative and integrative biosciences. Provides advanced training in data-driven, high-performance research, ideal for tackling complex biological and computational challenges.

Rick Grodsky ESE Award for Technical Achievement

March 2022

Washington University in St. Louis

- Awarded for completing an honors thesis on a real-time transcranial current stimulation (tCS) device and for presenting separate work on GPU-accelerated algorithms from the SBS lab at IEEE Supercomputing 2021.

Relevant Skills

- **Programming:** Python, C++, CUDA, MATLAB, Arduino
- **Machine Learning:** PyTorch, object detection, autoencoders, real-time adaptive learning
- **High-Performance Computing:** GPU acceleration, parallel computing, Docker
- **Research Design:** Experimental design, signal processing