

# Muhammad Uğur oğlu Abdulla

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## Skills

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**Technical:** Python, Julia, BigQuery, Pub/Sub, Open3D, FreeCAD, WebRTC

**Math:** Dynamical systems, control theory, optimization, ML, statistical signal processing, simulation

**Soft skills:** Research, data visualization, scientific communication & presentations

## Education

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**Stanford University** – PhD Candidate in Electrical Engineering Sep. 2022 – Jun. 2027 (Expected)  
**Stanford University** – MS in Electrical Engineering (GPA: 3.99) Sep. 2022 – Jun. 2025  
**University of Florida** – BS in Mathematics (GPA: 3.98) Aug. 2018 – May 2022

## Experience

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**Research Assistant @ Brain Interfacing Lab, Stanford University** – Stanford, CA Mar. 2023 – Present

- Developed novel mathematical models for the encoding of motor control for brain-machine interfaces
- Implemented machine learning algorithms in Python to analyze neural spiking data
- Designed data pipelines to process large datasets using pub-sub architecture on computing clusters
- Automated process for designing custom skull implants in FreeCAD based on CT imaging
- Created software to align data from four RGBD cameras and stream remotely via real-time web processing

**Research Intern @ National Institutes of Health** – Bethesda, MD / Remote Jun. 2021 – May 2022

- Developed biophysically-plausible ODE models of spiking activity in neurons
- Built C++ pipeline to efficiently simulate and tune parameters of large networks
- Utilized computational framework to investigate role of Calcium dynamics in Mammalian respiratory activity

**Research Assistant @ University of Pittsburgh** – Pittsburgh, PA / Remote May 2019 – May 2021

- Constructed dynamical systems model for ion-dependent frequency modulation in respiratory neurons
- Performed bifurcation analysis on model to propose a novel mechanism for observed biophysical phenomena

## Publications

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- **Abdulla, M.U.**, Clarke, S.E., Jun, E.J., & Nuyujukian, P. (2025). **Cutting out the middle man: low-dimensional invariance, stability, and drift in motor cortex.** *Under review.*
- Abdulla, U.G., Iqbal, N.H., **Abdulla, M.U.**, & Abdulla, R.U. (2025). **Classification of the second minimal orbits in the Sharkovski ordering.** *Axioms*, 14(3), 222.
- **Abdulla, M.U.**, Phillips, R.S., & Rubin, J.E. (2022). **Dynamics of ramping bursts in a respiratory neuron model.** *J. Comput. Neurosci.*, 50(2), 161–180.
- Abdulla, U.G. Abdulla, R.U., **Abdulla, M.U.**, & Iqbal, N.H. (2017). **Second minimal orbits, Sharkovski ordering, and universality in chaos.** *Int. J. Bifurcat. Chaos*, 27(5), 1730018.

## Community Involvement

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**Chess coach @ The Carey School** – San Mateo, CA Aug. 2025 – Present

**Electrical circuits teacher @ Stanford Splash** – Stanford, CA May 2025 – Present

**Math & English tutor @ Willie Mae Stokes Community Center** – Micanopy, FL Oct. 2021 – Jan. 2022

## Awards

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Stanford Neurotech Fellowship Program Sep. 2023 – Jun. 2025

National Science Foundation Graduate Research Fellowship Program Sep. 2022 – Present

Goldwater Scholar Mar. 2021

First Place & Grand Award @ International Science and Engineering Fair (ISEF) May 2018