

# Duncan T. Tulimieri

DATA SCIENTIST | PHD CANDIDATE, SENSORIMOTOR CONTROL AND ROBOTIC REHABILITATION LABORATORY

Newark, DE

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## Industry Experience

### New Age Alpha (FinTech Startup)

UpWork

DATA SCIENTIST, SOFTWARE DEVELOPER

February 2023 - Present

- Reduced algorithm run time by 60.22% to improve user experience through refactorization with MATLAB
- Worked to expand team by reviewing and performing technical interviews for 5 potential team members
- Reducing company expenses by rewriting 9 MATLAB algorithms to Python using class-based unit testing
- Ensure proper refactorization of code base with custom conda environment, git for version control, SQL database, and Azure DevOps
- Confirm all team members are on the same page by providing weekly updates and priority reviews

### ReproRehab

University of Southern California

TEACHING ASSISTANT

October 2022 - Present

- Improve and expand data science skills of rehabilitation researchers through weekly meetings and personal project assistance with MATLAB, Python, and git
- Encourage 1-on-1 help by hosting weekly office hours for troubleshooting MATLAB, Python, and git

### KINARM

BKIN Technologies

TEACHING ASSISTANT

May 2020 - May 2022

- Educated neuroscience researchers and promoted research autonomy by teaching robotic programming skills (MATLAB, Simulink, Stateflow)

## Education

### University of Delaware

Newark, DE

DOCTORATE IN NEUROMECHANICS

June 2019 - Present

- Course work included, but not limited to: machine learning, neuromechanics, computational neuroscience, statistics, and data science

### Denison University

Granville, OH

HEALTH, EXERCISE, AND SPORTS STUDIES & BIOLOGY

August 2015 - May 2019

- Department Fellow, Undergraduate Researcher, Tutor and Teaching Assistant, Strength and Conditioning Intern (Prentiss Hockey Performance)

## Research Experience

### University of Delaware

Newark, DE

DOCTORAL STUDENT

August 2019 - Present

- Brought 5 experiments from idea to production (develop idea and methodology, collect and analyze data, and present findings)
- Programmed 4 robotic tasks for KINARM Exoskeleton (using MATLAB and Simulink), 3 of which are used in continuing research
- Analyzed robotic experimental data by writing custom analysis scripts in MATLAB and Python
- Mentored 3 doctoral students and 3 undergraduate students to maximize learned content and conceptual/theoretical understanding
- Communicate findings by presenting at various conferences via podium talks and posters
- Contributed to science by writing initial manuscript drafts for each project

### Denison University

Granville, OH

UNDERGRADUATE STUDENT

August 2015 - May 2019

- Designed, deployed, and analyzed survey using Qualtrics resulting in a publication to support Athletic Trainers' scope of practice expansion

## Projects

2023	<b>Determining exercise dose for individuals with stroke via machine learning models</b>
2023	<b>Automated jump-landing scoring of markerless motion capture data for researchers and clinicians</b>
2021	<b>Development of a maze generation algorithm to be used as sensorimotor assessment</b>
2022	<b>Prediction of forest cover type on open-source data set with machine learning models</b>
2019	<b>Assessing the effect of speed and distance on kinesthetic matching in individuals with chronic stroke</b>
2023	<b>The perception of speed in the arms via psychophysical methods for individuals with chronic stroke</b>
2020	<b>Position matching with arms and eye movements for individuals with chronic stroke</b>
2023	<b>Robust optimization of minimum number of trials needed for experimental protocols</b>
2022	<b>Proprioceptive training for individuals with chronic stroke via robotic-joystick integration</b>

## Technical Skills

Python | MATLAB | Data Analysis | Data Visualization | Object-Oriented Programming | Test-Driven Development | Statistical Modeling | git | Non-Parametric Statistics | Class-based Unit-Testing | SQL | Style | Microsoft Office | LaTeX | Simulink Real-Time | Stateflow | C