Duncan **T. Tulimieri**

Data Scientist | PhD Candidate, Sensorimotor Control and Robotic Rehabilitation Laboratory

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Industry Experience

New Age Alpha (FinTech Startup) — *UpWork*

Data Scientist — *February 2023 - Present*

- Optimized run time of 9 MATLAB algorithms (~14,516 lines) by an average of 60.22% using class based unit testing to ensure proper refactorization
- Reviewed material and performed technical interview for 5 potential candidates
- Leading rewrite of 9 MATLAB algorithms to Python with custom conda environment, git for version control, and Azure DevOps

ReproRehab — *University of Southern California*

Teaching Assistant — *October 2022 - Present*

- Teach data science skills to multiple neurorehabilitation researchers ranging in expertise from beginners to advanced
- Host weekly office hours for troubleshooting MATLAB and Python code as well as git

KINARM — *BKIN*

Teaching Assistant — *May 2020 - May 2022*

- Taught robotic programming skills (MATLAB, Simulink, and Stateflow) to neurorehabilitation researchers

Education

University of Delaware — *Newark, DE*

PhD in Biomechanics and Movement Science — *June 2019 - Present*

- Course work included but not limited to: machine learning, neuromechanics, computational neurscience, 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*

PhD Candidate — *August 2019 - Present*

- Developed scientific ideas and methodologies for 5 experiments
- Programmed 4 robotic tasks with KINARM Exoskeleton (using MATLAB and Simulink), 3 of which are used in continuing research
- Wrote custom analyses, abiding by Google's MATLAB Style Guide, using object oriented programming and git for each experiment to ensure accuracy, efficiency, reproducability, transparency, and ease to build upon
- Mentored 3 graduate students and 3 undergraduate students

Denison University — *Granville, OH*

Undergraduate student — *August 2015 - May 2019*

- Designed, deployed, and analyzed survey using Qualtrics

Projects

Prediction of forest cover type

- Employed multiple machine learning models (KNN, LDA, Logistic, QDA, and SVM) on open-source data set

The effect of speed and distance on kinesthetic matching

- Improved existing kinesthetic assessment and developed re-usable methodology and tested on 64 participants (including some with stroke)

Perception of speed in the upper limbs

- Improve and integrate psi-marginal algorithm with robotic exoskeleton for real-time computations and data collection

Position matching with arm and eye movements

- Implement eye-matching with EyeLink 1000 eye tracking system for 60 participants (40 control and 20 with unilateral chronic stroke)

Optimization of experimental protocols

- Improve upon current methods to determine a more accurate minimum number of trials needed to replicate previous results

Proprioceptive training with integrated joystick

- Integrated peripheral (joystick) to control robotic exoskeleton arm in real time and collected 10 participants (5 control and 5 with stroke)

Technical Skills

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