Daniel A. Hagen

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EDUCATION

University of Southern California
Viterbi School of Engineering

PhD, Biomedical Engineering ('20)
- GPA: 3.955 (Provost Fellow)

MS, Biomedical Engineering ('16)
- GPA: 3.95

University of Arizona

BS, Mathematics ('10)
- GPA: 3.60

SKILLS

Languages:
Python
C/C++
MATLAB
JavaScript
LaTeX
HTML/CSS

Tools:
Github
Adobe Illustrator
REST APIs
Google Sheets
Microsoft Office
CAD (Fusion 360)
Machine Learning
Nonlinear Control
Simulations of Dynamical Systems

Soft Skills:
Adaptable
Results-Driven
Self-Motivated
Collaborative
Problem-Solving

COURSEWORK

Linear Systems Theory
Nonlinear and Adaptive Control
Neuromuscular Systems
Applied Electrophysiology

EXPERIENCE

University of Southern California May 2016 – Present
Graduate Research Assistant Los Angeles, CA

- Control and analyze redundant tendon-driven systems in order to increase our understanding of motor control by designing novel simulation platforms in both Python and MATLAB
- Built customized software now used by all members of the Lab designed to streamline team progress, improve accountability, and archive results

University of Southern California Aug 2017 – Jan 2020
Teaching Assistant Los Angeles, CA

- Facilitated weekly experiments which utilize concepts from biophysics to record physiological phenomena and to stimulate electrically-excitable tissue (e.g., EMG, EEG)
- Encouraged learning and proficiency in course concepts and lab techniques by leading weekly discussion groups of 15 or more students

iCue Catering Aug 2011 – Jan 2015
Owner/Head Chef Los Angeles, CA

- Established a new catering company, grown from a passion project into a stable business
- Curated private events and developed new menus all while managing event staff and coordinating closely with clientele in order to meet their needs

PROJECTS

insideOut
IEEE/RSJ IROS 2020 Peer-Reviewed Abstract
Developed a machine learning algorithm that estimates posture in tendon-driven robots from non-collocated sensors to produce estimates <0.01 degree in accuracy as an alternative to traditional on-location joint encoders

Errors in Kinematically-Approximated Muscle Fiber Lengths
bioRxiv 2020.07.08.194381
Quantified the error associated with approximating muscle fiber lengths from joint kinematics alone as a function of both tendon tension and musculotendon geometry

Musculotendon Kinematics During a Basketball Free Throw
Journal of Biomechanics Publication (2017)
Simulated 100,000 basketball free throws to illustrate that similar movements can induce drastically different musculotendon velocities (and therefore drastically different control strategies)