

Daniel A. Hagen

1060 20th St. #4, Santa Monica, CA 90403

☎ (626) 340-6994
✉ daniel8hagen@gmail.com

💻 daniel8hagen.com
🌐 linkedin.com/in/daniel-a-hagen

EDUCATION

University of Southern California, Viterbi School of Engineering

Doctor of Philosophy, Biomedical Engineering (GPA: 3.955, Provost Fellow)

May 2016 - Aug 2020

Master of Science, Biomedical Engineering (GPA: 3.95)

Jan 2015 - May 2016

University of Arizona

Bachelor of Science, Mathematics (GPA: 3.60)

Aug 2007 - May 2010

SKILLS

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

Tools: Tensorflow, Github, Object-Oriented Programming, Adobe Illustrator, Optimization
Biomimetic Robotics, Machine Learning, Nonlinear Control, Simulations of Dynamical Systems

Coursework: Linear Systems Theory, Nonlinear and Adaptive Control, Neuromuscular Systems,
Lagrangian Mechanics, Physiological Control Systems

Soft Skills: Multi-disciplinary, Creative, Self-Starter, Collaborative, Problem-Solving

EXPERIENCE

University of Southern California

May 2016 – Present

Graduate Research Assistant

Los Angeles, CA

- Simulate and control redundant tendon-driven robotic manipulators in order to increase our understanding of biological motor control by building custom simulated environments in both Python and MATLAB
- Wrote innovative, reliable software now used by all members of the Lab designed to support team progress, improve inter-team information flow, and publish 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 state estimates <0.01 degree in accuracy as an alternative to traditional on-location joint angle sensors

Controlling a Compliant Tendon-Driven Robot with Redundant Actuators

Accomplished stable reference trajectory tracking for redundantly-actuated, compliant tendon-driven systems using a variety of tools like integrator backstepping, feedback linearization, and model predictive control

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 (therefore requiring drastically different control strategies) through kinematic redundancy