Daniel A. Hagen, MS, PhD   Robotics / Machine Learning / Software Engineer

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PROJECTS

insideOut (Accepted IEEE/RSJ IROS 2020 Peer-Reviewed Abstract)

Developed a deep 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

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

DanPy Python Package (github/danhagen/danpy)

Created a fully-documented package with 95% test coverage that helps users catalogue and visualize their code progress in order to increase the rate of experimentation and help make better decisions about future experiments

EXPERIENCE

University of Southern California, Brain-Body Dynamics Lab   May 2016 – Aug 2020
Graduate Research Assistant, Machine Learning & Robotics Engineer   Los Angeles, CA

- Provided fundamental insight to biological motor control by designing novel simulation platforms in both Python and MATLAB and performing complex Monte-Carlo simulations on these redundant systems
- Increased general comprehension of complex multidimensional data and algorithms by creating concise illustrations
- Wrote robust, quality software still 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, Applied Electrophysiology   Los Angeles, CA

- Lead 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 while managing event staff and coordinating closely with clientele

SKILLS

Languages:	Python, C/C++, MATLAB/Simulink, JavaScript, LaTeX, HTML/CSS
Tools:	Tensorflow, GitHub, Travis CI, Object-Oriented Design, Command Line Operations, REST APIs, Data Visualization, Unit Testing, Biomimetic Robotics, Machine Learning, Simulations of Dynamical Systems
Coursework:	Linear Algebra, Nonlinear and Adaptive Control, Neuromuscular Systems, Path Planning, Lagrangian Mechanics, Inverse Kinematics, Optimization, Physiological Control Systems
Soft Skills:	Adaptable, Communicative, Product-Driven, Collaborative, Time-Management, Creative

EDUCATION

University of Southern California, Viterbi School of Engineering
Doctor of Philosophy, Biomedical Engineering (GPA: 3.955, Provost Fellow)   May 2016 - Aug 2020

University of Southern California, Viterbi School of Engineering
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