

Ryan Greenough

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EDUCATION

- Doctoral Degree in Mechanical Engineering** *Exp. Summer 2024*
University California at San Diego, La Jolla, CA
Emphasis: Dynamical Systems and Control in Power Systems
Minor: Adaptive Systems and Dynamic Modeling
- Masters Degree in Mechanical Engineering** *December 2017*
Santa Clara University, Santa Clara, CA
Emphasis: Dynamics and Controls GPA: 3.93 (With Distinction)
- Bachelor of Science in Mechanical Engineering** *June 2016*
Santa Clara University, Santa Clara, CA
Major: Mechanical Engineering GPA: 3.93 (Summa Cum Laude)
- Honors:** SMART Fellowship Awardee *Fall 2020-Present*
Valedictorian Semi-Finalist at Santa Clara University *Spring 2016*
WCC All-Academic Sophomore, Junior, and Senior seasons (2014-2016)
Senior Academic Award (Highest GPA of Graduating Male Athlete)
Dean's List for 2013-2016 academic years
Honor Societies: Tau Beta Pi, Pi Tau Sigma *Fall 2014- Spring 2016*

RESEARCH EXPERIENCE

- Climate Resilience Intern at Lawrence Livermore National Laboratory** *May 2023-Present*
- Formulated a distributed generation capacity and expansion planning scheme
 - Intended for simulation on large test systems including one that models all transmission-level electricity grid connections in California (CATS)
 - Incorporated CMIP6 climate data to accurately study the effects of climate change on future grid operation & planning

SMART Fellow

- NIWC Pacific Cryogenic Exploitation of Radio Frequency *June 2021-Present*
- Constructed a stream function model for current flows through 2-D SQUID/SQUIF devices
 - Created a simulation tool for both MATLAB and python
 - Collaborated with CERF experts in cryogenics electronics and quantum research

UC San Diego Graduate Student Researcher

- NUVVE INVENT Project *Winter 2020-Winter 2021*
- Forecasted day-ahead electrical loads for UCSD's microgrid
 - Leveraged predictive efficiency of aggregated regression decision trees and neural networks
 - Collaborated with Project Leads from NUVVE and Ph.D. students in the Center for Energy Research
 - Advised Project Leads on bids to CAISO's Demand Respond Auction Mechanism Day-Ahead Markets

Office of Naval Research RAIDER Project

- Fall 2018-Winter 2020*
- Formulated distributionally robust generalizations of the Expectation Maximization Algorithm
 - Explored risk-averse optimization strategies, such as utilizing Conditional Value at Risk
 - Collaborated with research teams from UC San Diego, Georgia Tech, and MIT

Intelligent Systems Engineering Intern at NASA Ames, CA

- June-August 2018*
- Co-authored paper on an optimal adaptive controller for a flexible-wing aircraft (CRM 13.5)
 - Ensured bounded tracking error performance through Lyapunov stability analysis
 - Improved transient performance and disturbance mitigation
 - Paper was presented at the 2019 AIAA SciTech Conference (January 2019)

Undergraduate Researcher at Santa Clara University

- Project SPACE: Automated Solar Panel Cleaner *September-May 2016*
Senior Design Project
- Increased PV Output by 10%, serviceable for a year without maintenance
 - Held prototype costs below \$500

Micro-grid Fabrication Latimer Energy Lab

June-August 2015

- Developed a multichannel DC-DC converter implemented in Malawi
- Exchanged concept designs with Silicon Valley startup eIQ Energy

TEACHING & MENTORING

Control Systems & Dynamics Graduate TA at UCSD

Fall 2018-Winter 2020

- Managed labs and demos for linear circuit design and analysis
- Graded midterms and finals and constructed homework solutions
- Arranged weekly office hours and recitation sessions

Controls and Vibrations Graduate TA at SCU

Fall 2016-Spring 2017

- Instructed courses and ran labs in CAD, Mechanical Vibrations, & Feedback Control
- Held weekly office hours and recitation sessions

CONFERENCE PAPERS

R. Greenough, G. McClone, M. L. Alvarez, A. Khurram, & J. Kleissl, "Decentralized Economic Dispatch via Proximal Message Passing," in 2022 IEEE Transportation Electrification Conference & Expo (ITEC), pp. 166-171, June 2022.

Y. -A. Chen, **R. Greenough**, M. Ferry, K. Johnson, & J. Kleissl, "Value stacking of a behind-the-meter utility-scale battery for demand response markets and demand charge management: real-world operation on the UC San Diego campus," in Proc. IEEE Power & Energy Society General Meeting, pp. 1-6, 2021.

K. E. Hashemi, **R. Greenough**, & N. T. Nguyen, "Optimal Control Design with Adaptive Nominal Loop," in AIAA Scitech 2019 Forum, p. 1425.

AIAA GNC Best Presentation of Session Award for Adaptive Control Systems II

TECHNICAL REPORTS

B. J. Taylor, S. T. Crowe, S. A. E. Berggren, M. C. De Andrade, K. J. Di Camillo, N. B. Ferrante, **R. D. Greenough**, J. N. Ptasinski, & A. M. Leese de Escobar, "Project Final Report," NIWC Pacific Technical Report 3280, 29 April 2022.

R. Greenough & J. Kleissl, "Utilization of Bagging Decision Trees for Pipelined UCSD Electrical Load and Locational Marginal Price Forecasting," NUVVE Technical Report, 2020.

BACHELOR'S THESIS

M. Burke*, **R. Greenough***, D. Jensen*, & E. Voss*, "Project SPACE: Solar Panel Automated Cleaning Environment" (2016). *Mechanical Engineering Senior Theses*. 62. (*equal contributions)

PRESENTATIONS

NREL 6th Autonomous Energy Systems Workshop, Golden, CO

September 6th-8th, 2023

EUCAS Poster Showcase*, Bologna, Italy

September 3rd-7th, 2023

PES GM Student Poster Competition, Orlando, FL

July 16th-20th, 2023

DTU PES Summer School Poster Competition, Lyngby, Denmark

June 19th-23rd, 2023

ITEC Poster Symposium, Anaheim, CA

June 14th-17th, 2022

UC San Diego PES Seminar Presentation, La Jolla, CA

April 29th, 2022

PES GM Paper Presentation*, Virtual

July 26th-29th, 2021

AIAA SciTech Forum, San Diego, CA

January 7th-11th, 2019

NASA Ames Poster Symposium, Mountain View, CA

August 10th, 2018

Santa Clara University School of Engineering Senior Design Showcase

May 12th, 2016

LEADERSHIP

Climate Action Policy Committee, UCSD, La Jolla, CA

Fall 2019- Present

- Amended UCSD policy to reduce the use of single-use plastics at the Price Center

Santa Clara Varsity Cross Country and Distance Track Team

Fall 2012- Spring 2016

- Contributed as a scoring member at the Conference and Regional Championships

Amizade/ Saint Ignatian Center at SCU, Tuba City, AZ

December 2014

- Renovated homes and organized Christmas-themed events in the Navajo Reservation
- Led one of the first immersion trips for an athletics program at SCU (10 participants)

SKILLS

Modeling Software: SolidWorks, Unity, CIPHER (Systems ID), Abaqus (FEA Modeling), STAR-CCM+(CFD Modeling)

Instrumentation and Circuit Analysis Software: LabView, LTSpice, and TINA Spice

Programming Languages: MATLAB, Python, C++, and HTML

UC San Diego Micro-MBA Degree

June-August 2021

Udacity Flying Car Nanodegree

February-September 2018