David P. Larson

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Education

University of California San Diego, La Jolla, CA — in progress
Ph.D., Mechanical Engineering
Advisor: Carlos F. M. Coimbra

University of California San Diego, La Jolla, CA — 2014
M.S., Mechanical Engineering

University of California Merced, Merced, CA — 2012
B.S., Mechanical Engineering

Research Experience

University of California San Diego, with Carlos F. M. Coimbra — 2012–present
Forecasting solar power output of large-scale photovoltaic power plants.

University of California Berkeley, with Robert Dudley — Summer 2011
Visiting UC LEADS Scholar, Cal NERDS Program
Evaluated the effects of turbulence on hummingbird flight dynamics.

University of California Merced, with Carlos F. M. Coimbra — Summer 2010
UC LEADS Scholar
Assisted in the development of an experiment for studying insect flight aeroelastics.

Journal Publications

D. P. Larson and C. F. M. Coimbra (2017). **On the use of spatially distributed telemetry for intra-hour solar power forecasting of utility-scale photovoltaic power plants**, (in preparation).

D. P. Larson and C. F. M. Coimbra (2017). **Direct power output forecasts from remote sensing image processing** , (submitted).

D. P. Larson, L. Nonnenmacher and C. F. M. Coimbra (2016). **Day-ahead forecasting of solar power output from photovoltaic plants in the American Southwest**, Renewable Energy (91), pp. 11–20.

Teaching Experience

Instructor, ENG 10: Fundaments of Engineering Applications — Fall 2017
Instructor, ENG 10: Fundaments of Engineering Applications — Spring 2017
Instructor, ENG 10: Fundaments of Engineering Applications — Winter 2017
Instructor, ENG 10: Fundaments of Engineering Applications — Fall 2016
University of California San Diego
Lectured on engineering mathematics, applications, and design.

Teaching Assistant, ENG 3: Orientation to Engineering III — Spring 2016
Teaching Assistant, ENG 3: Orientation to Engineering III — Spring 2015
Teaching Assistant, ENG 3: Orientation to Engineering III — Spring 2014
University of California San Diego
Lectured on project management, engineering as a profession, and engineering ethics.

Teaching Assistant, ENG 2: Orientation to Engineering II — Winter 2016
Teaching Assistant, ENG 2: Orientation to Engineering II — Winter 2015
Teaching Assistant, ENG 2: Orientation to Engineering II — Winter 2014
University of California San Diego
Lectured on career planning, professionalism, resume development, and presentation skills.

Teaching Assistant, ENG 1: Orientation to Engineering II — Fall 2015
Teaching Assistant, ENG 1: Orientation to Engineering II — Fall 2014
Teaching Assistant, ENG 1: Orientation to Engineering II — Fall 2013
University of California San Diego
Lectured on academic planning, time management, and study habits.

Mentoring

Undergraduate research

Jeremy Orosco (currently PhD student at UC San Diego)	2012–2014
Alex Corliss	2012–2013
Marina Fernandez (UC LEADS program)	2012–2014
Khari Rockward (STARS program)	2012–2014
Ciara Dooley	2013
Jocelyn Lu	2013–2014
Jonathan Perez	Summer 2014
Jessica Mart	2014–2015
Renn Darawali	2014–2015
Lorenzo Page	2013–2016
Stuart Sapia (currently MS student at UC Berkeley)	2015–2017
Mark Lozano	Summer 2015
Jessica Medrado (current PhD student at UC San Diego)	2016
Mai Nong	2016–2017
Joshua Mumford	Summer 2017

High School students

Leah Harvey	Summer 2015
Madeline Song	Summer 2015
Miya Coimbra	Summer 2015
Varkey Alumootil	Summer 2015
Bruce Markman (MAP program)	Summer 2017
Danial Beg	Summer 2017
Harris Beg	Summer 2017
Delara Aryan (MAP program)	2017
Daniel Pak (MAP program)	2017
Anthony Nguyen (MAP program)	2017

Outreach and Community Service

Center for Energy Research: Outreach Council, Volunteer — 2014–present
University of California San Diego
Presented solar energy demonstrations at events in the San Diego area.

SWEET Workshop Series, IDEA Student Center — 2015–present
University of California San Diego
Co-developed a set of technical workshops for undergraduate engineers.
Taught workshops on programming (Python and Matlab), CAD (Solidworks), numerical methods, time-series analysis, image processing, machine learning and 3D printing.

Professional Activities

Paper Reviewing
Solar Energy, Renewable Energy, AMS Journal of Applied Meteorology and Climatology, ASME Journal of Solar Energy Engineering

Awards

1st Place: People's Choice, Innovate to Grow Competition — Spring 2012
University of California Merced
Project title: "Microturbine for UC Merced Irrigation Canals"
Team members: David Larson, Daniel Leong, Samuel Isaiah, Steven Fleming

Distributed Power Generation Project — 2011
Project title: Solar Powered Cargo Ship
Sponsors: ESW, SunEdison/MEMC, Autodesk
Award amount: $8150

Honorable Mention, CITRIS Big Idea Competition — Spring 2010
Project title: "Distributed Computing for Open Access Solar Forecasting"
Team members: Ricardo Marquez, David Larson, Hugo Pedro
Award amount: $1000

Affiliations

ASME, Student Member 2009–present **SIAM**, Student Member 2017–present

Technical Skills

Data Science: machine learning, numerical optimization, convex optimization, data visualization, statistical data analysis, image processing, time-series analysis

Software: Python (NumPy, SciPy, Pandas, scikit-learn, iPython), MATLAB, Mathematica, C, Go, Julia, SQL, shell scripting, Git, Microsoft Office, LaTeX, Pro/ENGINEER, Solidworks, command-line tools (vim, ssh, etc.)

Hardware: Arduino, Beaglebone, Raspberry Pi, XBee/ZigBee, analog and digital sensors, I^2C, SPI, UART, machining (mill, lathe, CNC)

Platforms: Mac OS X, Linux, Windows