David Philip Larson

Contact Information

Ph.D. Student
Mechanical and Aerospace Engineering
University of California, San Diego
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Research Interests

Solar Forecasting, Non–Integer Order Methods, Nonlinear Chaos, Machine Learning

Education

University of California, San Diego
Ph.D. in Mechanical Engineering 2012–present
Advisor: Carlos F.M. Coimbra

University of California, Merced
B.S. in Mechanical Engineering 2008–2012

Citizenship

U.S.

Academic Research Experience

Lab Manager 2012–present
- Lab: Coimbra Group
- Location: University of California, San Diego
- Oversee research lab safety
- Manage group computer network and servers

Graduate Student Researcher 2012–present
- Lab: Coimbra Group
- Location: University of California, San Diego
- Investigating the application of Non-Integer Order Methods to Nonlinear Chaos Dynamics

Visiting UC LEADS Scholar Summer 2011
- Lab: Animal Flight Lab
- Location: University of California, Berkeley
- Host Program: Cal NERDS
- Investigated effects of turbulent air flow on hummingbird kinematics and metabolism
- Developed Particle Image Velocimetry (PIV) data analysis scripts for turbulent air flows

UC LEADS Scholar Summer 2010
- Lab: Coimbra Group
- Location: University of California, Merced
- Investigated aerodynamic trends of flapping flight

Lab Manager 2010–2012
- Lab: Coimbra Group
- Location: University of California, Merced
- Oversaw research lab safety
- Managed group computer network and servers
- Trained group members on proper lab equipment use

Undergraduate Student Researcher 2009–2012
- Lab: Coimbra Group
- Location: University of California, Merced
- Deployed high-fidelity irradiance and weather instrumentation at sites across CA and WA state
- Tested long term degradation of anti-dust glass coating for solar panels
- Analyzed animal flight data to determine underlying aerodynamic trends

Undergraduate Student Researcher 2008–2009
- Hirst Group
- Location: University of California, Merced
- Investiaged phase separation in lipid tubules

Lab assistant 2007–2008
- Lab: MEMS Lab
- Location: University of California, Santa Cruz
- Developed prototype printable RF-ID tag for tracking of dragonflies
- Trained undergraduates to continue printable RF-ID tag research

Professional Memberships

American Society of Mechanical Engineers (ASME), Member, 2009–present

Engineers for a Sustainable World (ESW), Member, 2011–present

Hardware and Software Skills

Computer Programming:
- Matlab, Mathematica, Python, PHP, MySQL, Unix shell scripting

Version Control and Software Configuration Management:
- Distributed Revision Control Systems (Git)

Computer Aided Design (CAD):
- Pro/ENGINEER, Autodesk Inventor

Prototyping Tools
- Computer Numerical Control (CNC) and manual mill, lathe, and drill press machining
- 3D printing using a ZCorp ZPrinter 650

Irradiance and Weather Instrumentation:
- Yankee Environmental Systems (YES) Multi-Filter Rotating Shadowband (MFR-7) and Total Sky Image (TSI-880)
- Eppley Laboratory Precision Spectral Pyranometer (PSP), Normal Incidence Pyrheliometer (NIP), Precision Infrared Radiometer (PIR), Total Ultraviolet Radiometer (TUVR), and Automatic Solar Tracker (SMT-3)
- Campbell Scientific CR1000 Data Logger
- Irradiance, Inc. Rotating Shadowband Radionometer (RSR2)
- Vaisala Weather Transmitter (WXT520)

Particle Image Velocimetry:
- LaVision DaVis image software, high speed cameras, q-switched lasers, wind tunnels

Productivity Applications:
- TEX (LATEX, BIBTEX), Vim, most common productivity packages (for Mac OS X, Windows, and Linux platforms)

Operating Systems:
- Mac OS X, Windows, Linux

Awards

Innovate to Grow Competition — May 2012
- 1st Place (tied) People's Choice
- Entry Title: Harvesting Energy from Irrigation Canals
- Team Members: David Larson, Daniel Leong, Steven Fleming, Samuel Isaiah

Distributed Power Generation Project — 2011
- Sponsors: ESW, SunEdison/MEMC, Autodesk
- Entry Title: Solar Powered Cargo Ship
- Funding Amount: $8150

CITRIS Big Idea Competition — Apr 2010
- Honorable Mention
- Entry Title: Distributed Computing for Open Access Solar Forecasting
- Award Amount: $1000

ASME Old Guard Oral Presentation Competition — Apr 2010
- 5th Place, District D
- Entry Title: Distributed Computing for Open Access Solar Forecasting

University of California, Merced
- Dean's Undergraduate Research Scholar, 2008–2009
- 2nd Place Service Learning Final Presentation, Dec 2009
- 1st Place Service Learning Final Presentation, May 2009
- 1st Place Service Learning Final Presentation, Dec 2008