

## EDUCATION

**University of California, San Diego***Ph.D. Mechanical Engineering*

March 2016–present

- San Diego Fellowship (Fall 2014–Spring 2018)
- Research interests:
  - nonlocal operators and variable order systems, control and stability, nonlinear/nonconvex optimization, fluid mechanical systems
  - efficient numerical methods for the solution of variable order differential equations
  - generalized variable order models for anomalous electromagnetic dispersion dynamics

**University of California, San Diego***M.S. Mechanical Engineering*

2016

- San Diego Fellowship (Fall 2014–Spring 2018)
- Courses (GPA: **3.88**):
  - MAE 280 A/B: Linear Systems and Control
  - MAE 288 A: Optimal Control
  - MAE 283 A: Open-loop System Identification
  - MAE 283 B: Closed-loop System Identification and Approximate Control
  - MAE 284: Robust and Multivariable Control
  - MATH 271 A/B/C: Nonlinear Optimization (UC/EQC/IEQC)
  - MAE 210 A/B/C: Fluid Mechanics and Hydrodynamic Stability
  - MAE 208: Engineering Mathematics

**University of California, San Diego***B.S. Mechanical Engineering*

2014

- Provost Honors, Warren College Honor Society
- Selected Courses:
  - MAE 143 A/B/C: Signals, CT/DT Control Systems
  - MAE 144: Embedded Control and Robotics
  - MATH 120 A: Complex Analysis

**MiraCosta Community College***A.A. Pre-Engineering*

2011

- Medal of Honor Scholarship
- President's List, President's Permanent Honor Roll
- President, Phi Theta Kappa Honor Society
- All California Academic Team

RESEARCH  
EXPERIENCE**Graduate Student Researcher, Coimbra Energy Group**

July 2014–present

*University of California, San Diego*

- Novel research: modeling, control, and stability of nonlocal variable-order mechanical systems

	<b>Undergraduate Student Researcher, Coimbra Energy Group</b> <i>University of California, San Diego</i> <ul style="list-style-type: none"> <li>- Clear-sky model development</li> <li>- Implemented irradiance data weather classification algorithm</li> <li>- Developed low-cost, self-sustaining portable irradiance sensing/logging station</li> </ul>	2012–2014
	<b>Independent Researcher, MAE Department</b> <i>University of California, San Diego</i> <ul style="list-style-type: none"> <li>- Developed novel forecasting method for chaotic determinant time series</li> </ul>	Winter 2013–Spring 2013
PUBLICATIONS	Orosco, J. and Coimbra, C.F.M.: On the Control and Stability of Variable Order Mechanical Systems. <i>Nonlinear Dynamics</i> (2016) <a href="#">Link</a> - <a href="#">PDF</a>	
MANUSCRIPT REVIEW	<b>Elsevier's <a href="#">Energy</a>, The International Journal</b> <b>Springer's <a href="#">Nonlinear Dynamics</a>, An International Journal of Nonlinear Dynamics and Chaos in Engineering Systems</b> <b>Elsevier's <a href="#">Chaos, Solitons &amp; Fractals</a>, The interdisciplinary journal of Nonlinear Science, and Nonequilibrium and Complex Phenomena</b> <b>Springer's <a href="#">Journal of Scientific Computing</a></b> <b>AIP's <a href="#">Physics of Fluids</a></b>	2014–Present 2016–Present 2016–Present 2016–Present 2017–Present
PROFESSIONAL MEMBERSHIPS	<b>Society of Industrial and Applied Mathematics (SIAM)</b> <b>American Society of Mechanical Engineers (ASME)</b> <b>Institute of Electrical and Electronics Engineers (IEEE)</b>	2017–Present 2017–Present 2017–Present
SELECTED PROJECTS	<b>Self-balancing Robot - <a href="#">MIP</a></b> <ul style="list-style-type: none"> <li>- Individual capstone controls project</li> <li>- Digital implementation of continuous time modeling and control design</li> </ul> <b>Fly Righting Response Experimentation Device - <a href="#">Fly2R</a></b> <ul style="list-style-type: none"> <li>- Team capstone mechanical design project</li> <li>- Developed for UCSD's Pharmacology Department for use with experimentation</li> <li>- Received Departmental Best Project Award</li> </ul> <b>Portable Solar Powered Sensing Station - <a href="#">get(Sol)</a></b> <ul style="list-style-type: none"> <li>- Individual research-based design project</li> <li>- Self-sustaining/monitoring sensing station, internal web/data management</li> <li>- 6+ month uninterrupted runtime (unplugged, zero maintenance)</li> </ul>	
AWARDS AND DISTINCTIONS	<b>San Diego Fellowship</b> <b>MAE Departmental Best Project Award: <a href="#">Fly2R</a></b> <b>UCSD Alumni Leadership Scholar</b> <b><a href="#">Coca-Cola Scholar</a></b> <b>MiraCosta College Medal of Honor Scholar</b> <b>MiraCosta College Foundation Scholar</b>	March 2014 Spring 2014 July 2012 March 2010 Apr 2010 June 2010

TECHNICAL  
SKILLSETS

**Programming**

- Syntax: Python, Matlab, Mathematica, C/C++, Julia, Git/SVN, L<sup>A</sup>T<sub>E</sub>X, Bibtex
- Environment: \*nix, Windows

**Design and Simulation**

- Eagle PCB, Inventor and Autocad, SolidWorks, PTC Creo (Pro/E), Siemens Femap, Ansys (FEA), SolidWorks COSMOS (FEA)

**Circuits and Electronics**

- PCB (SMD) prototyping and design, SMD hand-soldering
- Signal conditioning, sensing, actuation
- $\mu$ C: BeagleBone, Arduino, Raspberry Pi

**Rapid Prototyping**

- Machining, lasercamm

**Graphical Design**

- Adobe Photoshop and Illustrator

EMPLOYMENT

**Controls Engineer (intern)**

June 2016–December 2016

*Cymer / ASML*

- Individually undertaken project to research, design, and implement automation upgrades to existing experimental apparatus.
- Machine vision driven feedback loop based on observation of a modulated hydrodynamic instability and multi-stage actuation of an imaging assembly.
- Applied technical skillsets based on project deliverables:
  - mechanical design ( 5%)
  - software/hardware high and low level interfacing ( 15%)
  - hydrodynamics and hydrodynamic instabilities ( 15%)
  - control theory ( 25%)
  - machine vision ( 40%)