Jeremy Orosco

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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

Undergraduate Student Researcher, Coimbra Energy Group   2012–2014
University of California, San Diego
  - Clear-sky model development
  - Implemented irradiance data weather classification algorithm
  - Developed low-cost, self-sustaining portable irradiance sensing/logging station

Independent Researcher, MAE Department   Winter 2013–Spring 2013
University of California, San Diego
  - Developed novel forecasting method for chaotic determinant time series

PUBLICATIONS   Orosco, J. and Coimbra, C.F.M.: On the Control and Stability of Variable Order Mechanical Systems. Nonlinear Dynamics (2016) Link - PDF
  - Citation rate: 4.2 x impact factor

MANUSCRIPT
REVIEW

Elsevier's Energy, The International Journal   2014–Present

Springer's Nonlinear Dynamics, An International Journal of Nonlinear Dynamics and Chaos in Engineering Systems   2016–Present

Elsevier's Chaos, Solitons & Fractals, The interdisciplinary journal of Nonlinear Science, and Nonequilibrium and Complex Phenomena   2016–Present

Springer's Journal of Scientific Computing   2016–Present

AIP's Physics of Fluids   2017–Present

SELECTED
PROJECTS

Self-balancing Robot - MIP
  - Individual capstone controls project
  - Digital implementation of continuous time modeling and control design

Fly Righting Response Experimentation Device - Fly2R
  - Team capstone mechanical design project
  - Developed for UCSD's Pharmacology Department for use with experimentation
  - Received Departmental Best Project Award

Portable Solar Powered Sensing Station - get(Sol)
  - Individual research-based design project
  - Self-sustaining/monitoring sensing station, internal web/data management
  - 6+ month uninterrupted runtime (unplugged, zero maintenance)

AWARDS AND
DISTINCTIONS

San Diego Fellowship   March 2014
  - 4-Year scholarship: tuition and stipend
MAE Departmental Best Project Award: Fly2R   Spring 2014
UCSD Alumni Leadership Scholar   July 2012
Coca-Cola Scholar   March 2010
MiraCosta College Medal of Honor Scholar   Apr 2010
MiraCosta College Foundation Scholar   June 2010

TECHNICAL
SKILLSETS

Programming
  - Syntax: Python, Matlab, Mathematica, C/C++, Julia, Git/SVN, LaTeX, 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
 - μC: 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%)