

- [6] *Gordon Research Conference: Stochastic Physics in Biology*, January 8–13, 2017. Poster presentation.
- [7] *2nd Annual Quantitative and Computational Biosciences Retreat*, September 20, 2016. Oral presentation.
- [8] *10th European Conference on Mathematical and Theoretical Biology and SMB Annual Meeting*, July 11–15, 2016. Poster presentation.
- [9] *Southern California Applied Mathematics Symposium 2016*, June 4, 2016. Poster presentation.
- [10] *Biology and Medicine through Mathematics Conference*, May 20–22, 2016. Poster presentation.
- [11] *GATP-BWF-SIB Joint Research Symposium 2016*, April 28, 2015. Poster presentation.
- [12] *Multiscale Modeling and Validation in Medicine and Biology III*, February 25–26, 2016. Poster presentation.
- [13] *GATP-BWF-SIB Joint Research Symposium 2015*, April 27, 2015. Poster presentation.
- [14] *Sigma Xi Research Symposium: Cal. State Northridge 2013*, April 26, 2013. Oral presentation.

TEACHING
EXPERIENCE

University of California at Los Angeles, Los Angeles, CA

Teaching Associate

September 2017 to June 2018

- CLUSTER 70A: Cosmos and Life
 - Fall 2017
 - Responsible for two 2-hour discussion sections on topics including the Big Bang, the expansion of the universe, special and general relativity, the life cycle of a star, planetary science, and geology.
 - Sample student evaluations available upon request.
- CLUSTER 70B: Cosmos and Life
 - Winter 2018
 - Responsible for two 2-hours discussion sections on topics including geological dating, evolutionary biology, paleontology, ecology, and phylogeny.
 - Sample student evaluations available upon request.
- CLUSTER 70CW: Cosmos and Life Seminar Series: Infinite Complexity and Chaos
 - Spring 2018
 - Designed and instructed a 3 hour weekly seminar series on various high level mathematical concepts taught in layman’s terms. The learning goals of the course were to expose non-STEM oriented students to ideas and pathologies in mathematics which would typically be missing from their college education, and to teach them pedagogical writing and presentation skills. Topics included introductions to the hierarchy of infinities, imaginary numbers, topology, analytic continuation, chaos theory, cryptography, and variational approaches to real world problem. One lecture is dedicated to the prevalence, but further need of women and diversity in STEM related fields.
 - Sample student evaluations available upon request.

California State University at Northridge, Northridge, CA

Guest Lecturer

September 2016

- MATH 493: Undergraduate Seminar in Mathematics
 - Presented my research on mathematical modeling of the dynamics of HIV infection of a single cell. Included a thorough explanation of the biology of retroviral infection, compartmental modeling, equilibrium dynamical systems, and nonlinear regression. The underlying theme of the talk was the the usefulness of mathematical modeling in systems biology.

Teaching Assistant

September 2012 to May 2013

- MATH 102L: College Algebra Lab
 - Spring 2013
 - Responsible for 1-hour supervision of laboratory where students work on and discuss functions, linear equations, quadratic equations, inequalities, probability, and determinants.
- MATH 103L: Mathematics Models for Business Lab

- Fall 2012
- Responsible for 1-hour supervision of laboratory where students work on and discuss algebra, geometry, and calculus applications in business.

Upward Bound STEM Instructor

February 2011 to July 2012

- Upward Bound Summer Session: Calculus
 - Summer 2011 and Summer 2012
 - An introductory course in limits, derivatives, integrals, the Fundamental Theorem of Calculus, and their applications.
- Upward Bound Summer Session: Imagine Mars
 - Summer 2011
 - Students were to envision a colony on Mars by performing various science and art projects.
 - Projects included building a hydroponic garden, creating 3D models of the colony in Google Sketchup and Google Earth, and integrating social networking into the tasks.
- Upward Bound Saturday Academy
 - Spring 2011
 - A science elective course where the students performed miscellaneous science projects to motivate them in the STEM (Science, Technology, Engineering, Math) subjects.
 - Projects included building an electrical generator, an electric motor, and a battery.

PROFESSIONAL
EXPERIENCE

University of California at Los Angeles, Los Angeles, CA

IPAM RIPS Academic Mentor

June 2018 to August 2018

- Managed two teams of undergraduate mathematics students enrolled in a summer research internship program at Hong Kong University of Science and Technology. Each team worked with an industry sponsor to solve a real world problem, document their results, and present their findings to an audience of academics.
 - One team, working with Tencent in Shenzhen, China, expanded methods of automated music generation using a hybrid of recurrent and convolutional neural networks.
 - The second team, working with Using.ai in Shenzhen, China, formulated a method of semi-supervised learning using deep convolution generative adversarial networks for computer vision applications in autonomous vehicles.

California State University at Northridge, Northridge, CA

Graduate Researcher

June 2011 to May 2013

- Developed an algorithm to simulate phase transition in large scale biological swarms induced by thermodynamic noise and spontaneous birth and death of individuals.
- Implemented an OpenGL 3D graphics visualization of the simulation.

Arete Associates, Northridge, CA

Intern Scientist

June 2010 to August 2010

- Developed two algorithms to map out areas of a digital elevation model that would be obscured from view of a tracker of a given airborne position for applications in tracking methodologies.
 - One algorithm used concepts of ray tracing and geometry to test collisions of a ray connecting the target and tracker with the digital terrain. The resulting obscuration map was exported to Google Earth to overlay with the terrain map.
 - The second algorithm used OpenGL 3D modeling to make use of the depth buffer to generate a shadow map.
- Presented and defended my final results of the project to the entire staff of scientists and engineers of the company.

Edwards Air Force Base, Edwards AFB, CA

Electrical Engineer

June 2008 to May 2010

- Collaborated with other intern engineers on various projects in the Avionics Lab.
 - Developed the hardware configuration and software for a guidance system for a small scale, inert smart bomb. This included coding a Kalman filter and interfacing with a micro controller and electric servos.

- Built a prototype of a single-winged unmanned aerial vehicle to test a proof of design.
- Collaborated with CSU Northridge’s ECE faculty to develop a software-defined radio. In charge of developing a demodulation scheme for the raw input signal before being fed into a digital signal processor.
- Taught a course on object oriented programming with C++ and micro controller development to high school interns for two separate summers.

HARDWARE AND SOFTWARE SKILLS Computer Programming:
 • C, C++, OpenGL, Matlab, Mathematica, R, T_EX (L^AT_EX, B_IB_TE_X), JavaScript, HTML, CSS, Assembly (SPARC, Motorola).

Analog and Digital Electronics:
 • Amplifiers, modulators, converters, and filters. Microcontrollers (Motorola HCS12, Arduino) and interfacing them with PWM compatible devices (servos, motors, etc.)

EXPERTISE Mathematics:
 • Applied Mathematics, Linear Algebra, Numerical Analysis, Real and Complex Analysis, Measure Theory, Calculus of Variation, Topology, Stochastic Processes, Ordinary and Partial Differential Equations, Mathematical Physics, Group, Ring, and Field Theory, Nonlinear Regression, Combinatorics

Biology:
 • Evolutionary Biology, Immunology, Virology, Physics of Biological Assays, Chromosome Folding, Developmental Biology, Neuroscience, Biochemistry, Ecology

Electrical Engineering:
 • Linear and Nonlinear Systems Theory, Optimal Control, Digital Control, Fuzzy Control, Digital Signal Processing, Communications, Digital Logic

Computer Science:
 • Object Oriented Programming, Pattern Recognition, Machine Learning, 3D Computer Graphics, Nonlinear Numerical Optimization, Assembly Programming

AWARDS [University of California at Los Angeles](#)
 • Carol Newton Travel Award, 2015–2016, 2016–2017, 2017–2018
 • Systems and Integrative Biology Training Grant, 2014–2016
 • Eugene V. Cota-Robles Fellowship, 2013–2017

[The California State University](#)
 • CDIP Mini-Grant, 2015–2016
 • Chancellor’s Doctoral Incentive Program, 2013–2016
 • Sally Casanova Pre-Doctoral Scholar, 2012–2013

[California State University at Northridge](#)
 • Graduate Equity Fellowship, 2012–2013

SECURITY CLEARANCE U.S. Department of Defense Secret Clearance (expired: 2011)

CITIZENSHIP USA, UK

REFERENCES AVAILABLE TO CONTACT **Dr. Tom Chou** (e-mail: tomchou@ucla.edu; phone: (310)-206-2787
 • Professor, Biomathematics, University of California, Los Angeles
 ◇ Los Angeles, CA 90095
 ★ *Dr. Chou is my PhD adviser.*

Dr. Maria-Rita D’Orsogna (e-mail: dorsogna@csun.edu; phone: (818) 677-2703
 • Professor, Mathematics, California State University at Northridge
 ◇ 18111 Nordhoff St., Northridge, CA 91330
 ★ *Dr. D’Orsogna was my masters adviser. She is also on my PhD committee.*

Dr. Tony Friscia (e-mail: tonyf@ucla.edu; phone: (310)-206-6011

- Professor, Department of Integrative Biology and Physiology, University of California, Los Angeles
- ◊ Los Angeles, CA 90095
- ★ *Dr. Friscia is the interim director of the UCLA Cluster program and lecturer for CLUSTER 70.*

Dr. Ryan Ellingson (e-mail: rellingson@ucla.edu; phone: (310)-206-6011

- Professor, Department of Ecology and Evolutionary Biology, University of California, Los Angeles
- ◊ Los Angeles, CA 90095
- ★ *Dr. Ellingson is the managing professor and lecturer for CLUSTER 70.*

Dr. Jorge Balbas (e-mail: jorge.balbas@csun.edu; phone: (818) 677-7797

- Professor, Mathematics, California State University at Northridge
- ◊ 18111 Nordhoff St., Northridge, CA 91330
- ★ *Dr. Balbas was the associate director of IPAM and the UCLA RIPS program in Hong Kong. He was also on my masters committee.*