Paulina Rodriguez

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Education

Ph.D. Mechanical and Aerospace Engineering, The George Washington University (GWU), Washington, DC 2025
Doctoral Candidate, *"Case Study: Enhancing Credibility and Reliability in Medical Device Evaluation through Computational Fluid Dynamics for Risk-Informed Decision-Making"*
M.S. Mathematics, Claremont Graduate University (CGU), Claremont, CA 2012
B.A. Mathematics, University of California Santa Cruz (UCSC), Santa Cruz, CA 2010

Research

Year Round Intern, Sandia National Laboratories — **Albuquerque, New Mexico**
In person summer Practicums (2) on small sample multi-metric validation — 2022, 2023, 2024
Doctoral Candidate, The George Washington University (GWU) — **Washington, DC**
Computational modeling and simulation (CM&S), credibility, and reproducibility — 2021 - Current
Regulatory Science Researcher, US Food and Drugs Administration (FDA) — **Silver Spring, MD**
ABioM Project, Agile Approach to Risk Informed Credibility for CM&S — 2017 - 2021
SimSight Project, 510(k) and Premarket Application Python Search Tool — 2020
Graduate Researcher, Claremont Graduate University (CGU) — **Claremont, CA**
Coffee Ring Effect Analysis & Analytic Methods — 2012
Allergens Microarray Data Analysis & Bayesian statistics with R — 2011
Solar Chimney Optimization of HVAC for Environmental Design Group — 2011
Graduate Researcher, National Institute of Genomic Medicine (INMEGEN) — **Mexico City, Mexico**
Neurocysticercosis Bayesian Statistical Small Sample Data Analysis — 2011
Undergraduate Research Assistant, Institute for Pure and Applied Mathematics, UCLA — **Los Angeles, CA**
Orbit Transfer Optimization for The Aerospace Corporation — 2009
Undergraduate Research Assistant, University of California, Santa Cruz (UCSC) — **Santa Cruz, CA**
Hamiltonian Systems — 2008 - 2009

Work

Research Scientist, US FDA, Silver Spring, MD — **2017 - 2021**
Developed regulatory science research tools for medical device modeling. Managed teams of 4 - 6 SME.
Senior Web Developer, Search Influence, New Orleans, LA — **2015 - 2017**
Improved data collection accuracy for 30 accounts and search engine optimized 40-50 websites.
Tutor Coordinator, Learning Support Services at UCSC, Santa Cruz, CA — **2014**
Managed tutor database and website, identified 158 courses requiring tutors. Hired, trained, and assessed 250 tutors.
Program Assistant and Student Advisor, California Teach Program at UCSC, Santa Cruz, CA — **2013 - 2014, 2015**
Managed funding, organized events, advised students, improved websites, and electronically streamlined applications.
Contract Tutor, Youth Policy Institute, Los Angeles, CA — **2013**
11 students (grades 1-7) improved 95% in English Language Arts and Mathematics (LA Unified School District).
Mathematics Department Tutor, Learning Support Services, UCSC, Santa Cruz, CA — **2009**
One-on-one tutoring for 8 undergraduate mathematics courses (10-15 students/ 3hr session). 100% passed courses.
Co-Leader & Tutor, Academic Excellence Program (ACE), Santa Cruz, CA — **2007 - 2010**

Teaching & Volunteering

Instructor & Developer, Reproducibility, Python, and Git Training for FDA Interns at FDA, Silver Spring, MD 2023
Research Scientist, Annual STEM Day at Annapolis Middle School, Annapolis, MD 2022
Subject Matter Expert, FDA Digital Transformation OCR Search Capabilities, Silver Spring, MD 2020
Subject Matter Expert, FDA CDRH's Experiential Learning Program, Dassault Systèmes, Waltham, MA 2019

Volunteer, USA Science & Engineering Festival: US FDA Booth, Washington, DC 2018
Founder and Secretary, DC SACNAS Chapter, Washington, DC 2018
Volunteer, UNIDOS US: Hands-On Science Booth, Washington, DC 2018
Lead, Tech Talent South New Orleans: Kids Code New Orleans, New Orleans, LA 2016
Founder and President, SACNAS at the Claremont Colleges Chapter, Claremont, CA 2012
Council Member, Graduate Student Council, Claremont, CA 2011 - 2012
Tutor and Teaching Assistant, Harbor High School, Santa Cruz, CA 2010
Cal Teach Intern, California Teach (Cal Teach) Program at UCSC, Santa Cruz, CA 2008 - 2009
Mentor and Presenter, Expanding Your Horizons Conference, Santa Cruz, CA 2007 - 2008

Awards

DOE Computational Science Graduate Fellowship (CSGF) 2021 - 2025
US FDA Outstanding Service Award 2019
Claremont Graduate University Math Tuition Fellowship 2008 - 2010
Koret UC LEADS Symposium *Poster Recognition* 2008 - 2010
CAMP Symposium Poster Recognition 2009 - 2010
SACNAS Video Presentation for Student Tutorial Award 2009

Publications & Presentations

Rodriguez, P., Barba, L., "Developing a Risk-Informed Computational Model for a Medical Device: A Credibility-Building Approach", DOE CSGF Annual Program Review, 2023. Poster.

US FDA. "Successes and Opportunities in Modeling and Simulation for FDA", Report on Modeling & Simulation at FDA, https://www.fda.gov/science-research/about-science-research-fda/modeling-simulation-fda/

Rodriguez, P., Sarmakeeva, A., Barba, L., "Comparing Open-Source and Commercial Software Solvers for Hagen-Poiseuille Flow", DOE CSGF Annual Program Review, 2022. Poster.

Sarmakeeva, A., Rodriguez, P., Barba, L., "Verification of Open-Source and Commercial Numerical Solvers for Hagen-Poiseuille Flow", SEAS Student Research & Development Showcase, 2022. Poster.

Rodriguez, P., "Agile for Biomedical Modeling (ABioM)", US FDA Presentation, 2019. Webinar.

Rodriguez, P., Dibaji, A, Murray, B., Myers, M., Pathmanathan, P., Morrison, T., "A Management Framework for Supporting Adaptive and Iterative VVUQ Efforts in Biomedical Modeling", ASME V&V Symposium, 2019. Podium Presentation

Rodriguez, P., Dibaji, A, Murray, B., Myers, M., Morrison, T., "An Agile Verification and Validation Process for Generating Regulatory-Grade Evidence", ASME V&V Symposium, 2018. Podium Presentation

Fanger, M., Rodriguez, P., Talacay, L., Takmakov, P., Morrison, T., "SimSight: Data Mining to Determine the Role of Computational Modeling and Simulation in Regulatory Decisions for Marketed Devices", FDA Summer Fellow Scientific Poster Day, 2019.

Peterson, G.E., Campbell, E.T., Balbas, J., Ivy, S., Merkurjev, E., Rodriguez, P., "Relative Performance of Lambert Solvers 1: 0-Revolution Methods, Adv Astronaut Sci", 136 (1), pp. 1495-1510, presented at 20th AAS/AIAA Space Flight Mechanics Meeting, San Diego, CA, February 14-17, 2010

Rodriguez, P., Castaño, K., Rangel-Escareño, C., "High Feature-to-Sample Ratio Neurocystercosis Data Set in Gene Expression Microarray Analysis", SACNAS, 2011. Poster

Rodriguez, P., Ivy, S., Merkujev, E., Hall, T., Balbas, J., "Implementing and Comparing Lambert Solvers for Trajectory Design Studies and Space Mission Analyses", Koret UC LEADS Symposium, CAMP Symposium, 2010, SACNAS 2009. Poster

Rodriguez, P., Villaron, M., Lewis, D., "Hamiltonian Systems and their Application to Dynamical Waves and Fluids", NCUR, 2009, Koret UCLEADS Symposium, 2009, CAMP Symposium, 2009, SACNAS 2008. Poster

LANGUAGES

English
Spanish

TECHNOLOGIES SUMMARY

Languages: Python, R, C++, C, Octave, PHP, JavaScript, Markdown, CSS, HTML, RubyonRails
Numerical Solvers: ANSYS CFX, OpenFOAM
Operating Systems: Windows, Linux, MacOS, UNIX
Database Management: Postgres, MySQL
High Performance Computing Parallelization Methods: MPI, OpenMP
Software: Git, MATLAB, LaTeX, Jupyter Notebooks
Text Editors: Vim, Nano, Sublime, Emacs, VSCode