
Updated April 23, 2020

RESEARCH INTERESTS and SUMMARY

Artificial intelligence and visualization in medicine to develop clinical decision support systems using machine learning, data mining, and visual analytics on multivariate, temporal medical data to personalize medicine and improve diagnosis and treatment; human computer interaction and cybersecurity to develop novel interfaces in medicine and in assistive technologies that ensure the privacy of its users; health informatics to reduce health disparities around the world; and computer science education research in public schools to democratize access to computer science learning and increase the diversity of the population of computing professionals. I specialize in bringing people from different disciplines, nations and ethnicities together to tackle equity in health and computer science education. First Hispanic woman to receive a PhD in the Department of Computer Science and in the College of Information Technology and Engineering at the University of Maryland Baltimore County. First woman to be promoted to Associate Professor and receive tenure in the Department of Computer Science of the University of Puerto Rico Río Piedras.

EDUCATION

- PhD in Computer Science** May 2012
University of Maryland, Baltimore County
Dissertation Title: Multivariate Time-Series Analysis of Physiological and Clinical Data
Advisor and Chair: Dr. Tim Oates Co-Chair: Dr. Marie desJardins
Committee Members: Drs. Anupam Joshi, Jim Fackler, and Christoph U. Lehmann
- MS in Computer Science** August 2010
University of Maryland, Baltimore County
Thesis Title: An Animated Multivariate Visualization for Physiological and Clinical Data in the ICU
Advisor: Dr. Marie desJardins
- BA in Hispanic and Italian Studies** June 1989
Johns Hopkins University

AWARDS

- Group awarded second place in the Best Demo category at 17th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS) 2015.
- Group awarded second place at Health and Wellness Innovation Event 2012 at MIT for the development of electronic diabetes logbook <https://diabeteslogbook.wordpress.com/>
- Recipient of UMBC Dissertation Fellowship in spring 2011.
- Honorable Mention and Alternate for Ford Foundation Dissertation Fellowship in 2010.
- Recipient of Jessica Soto Pérez Award in 2009 given by Graduate Student Association for aiding graduate students in academic and professional pursuits.
- Nominated for the Student Best Paper Competition in AMIA 2008 Annual Symposium.
- Recipient of Graduate Research Fellowship from National Science Foundation in 2007.
- Honorable Mention List for Ford Foundation Diversity Pre-doctoral Fellowships Program in 2007.
- Recipient of Xerox Technical Minority Scholarship for 2007-2008.
- Recipient of Scholarship from the Hispanic Scholarship Fund in 2005-2006.
- First prize in Mathematics, Physical Sciences and Engineering category for poster presentations at the PROMISE Research Symposium, January 2006.
- Recipient of Scholarship from Verizon Fellowship Program in 2005-2006.
- Named High School Field Hockey Coach of the Year in Howard County in 1994 by the Baltimore Sun.

HIGH PROFILE INTERVIEWS

- Featured in NPR interview by Steve Henn, *Episode 576: When Women Stopped Coding*, October 2014 and July 2016: <https://one.npr.org/?sharedMediaId=487069271:487082443>
- Featured in article for CienciaPR, *Propelling Computer Science* by Reyna Martinez de Luna, October 2016: <https://www.cienciapr.org/en/monthly-story/patricia-ordonez-propelling-computer-science-health-industry-and-equity>
- Featured in New York Times article *The Secret History of Women in Computing* by Clive Thompson, February 2019: <https://www.nytimes.com/2019/02/13/magazine/women-coding-computer-programming.html>
- Featured in CMD-IT Newsletter, *An Interview with Patricia Ordóñez, Tapia 2020 Deputy Program Chair* by Jerri Barrett, February 2020: <http://www.cmd-it.org/news/archives/2020/02/20/an-interview-with-patricia-ordonez-tapia-2020-deputy-program-chair/>

Featured in National Geographic video series, I CAN SCIENCE, created by UC Davis researcher, Dr. Rebecca Calisi Rodríguez, to appear 2020.

EMPLOYMENT HISTORY

- 2016 – now **Associate Professor**
University of Puerto Rico Río Piedras, Department of Computer Science
Tenured faculty position teaching undergraduate students and mentoring undergraduate and graduate students in research to develop a lab that is focused on applying machine learning, data mining, and data visualization to big time-series data for the purpose of improving medicine. Working on voice controlled Electronic Health Records, visualizations for EHRs, and analysis of bee activity and ICU vital sign time series data taking into account Circadian Rhythms. Actively developing an interdisciplinary undergraduate data science program in the university and K-12 computer science education curriculum in the public high schools of Puerto Rico.
- 9-11/2017 **Instructor/Interpreter/Consultant**
AnnieCannons Inc.
Served as substitute instructor and interpreter in the AnnieCannons bootcamp for survivors of human trafficking and domestic abuse and as a consultant in the development of curriculum and in teaching practices.
- 7-8/2017 **Visiting Faculty**
Facebook
Visiting Faculty in Data Analytics team. Experienced a summer internship to develop curriculum in data science and better prepare our students for summer data science internships in Silicon Valley.
- 2012 – 2016 **Assistant Professor**
University of Puerto Rico Río Piedras, Department of Computer Science
Tenure-track faculty position teaching undergraduate students and mentoring undergraduate and graduate students in research to develop a lab that is focused on applying machine learning, data mining, and data visualization to big time-series data for the purpose of improving medicine. Worked on developing a spoken programming language for people with limited mobility in their hands. Determined to create a strategic plan for incorporating a high caliber computer science education curriculum in the high schools of Puerto Rico.
- Summer 2015 **Visiting Researcher**
Massachusetts Institute of Technology
Developed a secure interface to the high frequency streaming monitor data from a local hospital using Rabbit MQ while working at the Laboratory of Computational Physiology.
- 2013 **Leader of Biomedical Informatics Function**
Puerto Rico Clinical and Translational Research Consortium
Helped to develop the infrastructure for medical researchers to take advantage of and incorporate biomedical informatics into their research in a multi-campus consortium consisting of the University of Puerto Rico Medical Sciences Campus, Universidad Caribe Central, and the Ponce School of Medicine.
- 2005-2012 **Technical Trainer and Curriculum Development Specialist**
UMBC Training Centers
Repeatedly taught two introductory Java courses, which prepared students for Sun's Java Programmers Certification Exam for the Java 2 Platform 1.4 over eight weeks; week-long introduction to programming course in different programming languages (ANSI C, Java, and Python) over the span of the first six years. Summer of 2012 developed format for online courses for the cyber security curriculum and taught an Introduction to Linux course and an Introduction to Perl course.
- Fall 2011 **Teaching Assistant**
University of Maryland, Baltimore County
Taught and developed labs for the course CMSC 202, "Computer Science II for Majors," required for all computer science majors. Held office hours and graded exams. Course used Java for programming.
- Spring 2011 **UMBC Dissertation Fellow**
University of Maryland, Baltimore County
Worked on the development and evaluation of my dissertation research. Lead team of three underrepresented undergraduates using funds I raised from the Collaborative Research for Undergraduates Program (CREU) grant. See **Funded Proposals**.
- Fall 2010 **Instructor**
University of Maryland, Baltimore County
Taught CMSC 201, "Computer Science I for Majors," an undergraduate course required by computer science majors. Assisted in the development of the curriculum for this course in a special topics course in spring 2009. Course used Python for programming.
- 2007-2010 **NSF Graduate Research Fellow**
University of Maryland, Baltimore County

Developed multivariate time series representations of clinical and physiological data for the purpose of improving medical diagnosis of patients in critical care using visualization and machine learning techniques. Worked in collaboration with dissertation committee members, Drs. Jim Fackler and Christoph U. Lehmann at the Johns Hopkins University School of Medicine.

- Fall 2009 **Instructor**
University of Maryland, Baltimore County
Taught CMSC 104 “Problem Solving and Computer Programming,” an undergraduate elective for non-programmers. Course used JavaScript and HTML for programming.
- 6-8/2009 **Visiting Student Researcher**
Massachusetts Institute of Technology
Developed two new visualizations for multivariate clinical and physiological data under the guidance of Dr. Roger Mark of the Laboratory of Computational Physiology.
- 6-8/2009 **Resident Assistant**
MIT Summer Research Program (MSRP) of the Office of the Dean for Graduate Education
Served as the liaison between the directors of MSRP and the head of the dorm where undergraduates in the program resided. The program’s mission is to promote the value of graduate education, improve the research enterprise through increased diversity and recruit the best and brightest for graduate education at MIT.
- Fall 2007 **Instructor**
University of Maryland, Baltimore County
Taught CMSC 341 “Data Structures,” an undergraduate course required for computer science majors. Course used Java for programming.
- 2005-8/2007 **Graduate Assistant**
University of Maryland, Baltimore County
Assisted in the conversion of two core courses of the Computer Science curriculum from C++ to Java - CMSC 202 “Computer Science II” and “CMSC 341 Data Structures”. Prepared marketing materials for prospective and incoming graduate students for all the departments in CSEE – Computer Science, Electrical Engineering and Computer Engineering.
- 2006-2007 **Research Assistant**
University of Maryland, Baltimore County
CAST (Context Aware Surgical Training): An environment where pervasive technologies, agent technologies, Semantic Web ontologies, logic reasoning, security and privacy policies, and RFID (radio frequency identifier) technology are being developed to extend the capabilities of the MASTRI Center, a surgical training facility located at the University of Maryland Medical School under guidance of Dr. Anupam Joshi and Dr. Tim Finin.

Traumapod: A DARPA funded project to build an unmanned vessel that will provide lifesaving medical care by medic at remote location to soldiers wounded on the battlefield while they are being transported to hospital. Responsible for the Resource Monitoring System that uses pervasive computing to record medically significant events such as the administering of anesthesia under guidance of Dr. Anupam Joshi and Dr. Tim Finin. Project ended March 29, 2007.
- 5-8/2006 **Summer Research Intern**
IBM Almaden Research Center, Mentor James Rhodes
Created two interactive visualizations, a graph and a tree view, for the IBM Chemical Search Engine using Prefuse, an interactive visualization toolkit. Also, developed the experiments and wrote about results and visualizations for a published paper on the search engine. *Co-author on paper.*
- Spring 2006 **Teaching Assistant**
University of Maryland, Baltimore County
Taught labs for the undergraduate course, CMSC 202 “Computer Science II for Majors” required for computer science majors, held office hours, and graded exams. Course used C++ for programming.
- Fall 2005 **Instructor**
University of Maryland, Baltimore County
Taught CMSC 104 “Problem Solving and Computer Programming,” an undergraduate elective for non-programmers. Course used Perl and C for programming.
- 2000.2005 **Technical Trainer**
/training/etc Inc.
Taught intensive week long courses in Java, Swing, Perl, C, C++, Linux, and Web Application Programming. Taught 1-3 day classes in HTML, XML, JavaScript, WSAD, CGI using Perl, Dreamweaver, Oracle SQL and Oracle PL/SQL. Created and maintained a FileMaker database to manage classes for the company.
- 1996-2000 **Technical Support and System Trainer**
CAM Software & Support

Provided over 6700 man-hours of training and 170 successful installation of property management software. Responsible for updating and editing the 900 page Reference Manual for the software. Developed the company's first national training seminar to introduce the latest version of the software to clients. Responsible for everything from developing the marketing materials and creating the curriculum to teaching the seminars and setting up the classrooms.

1991-1996 **High School Teacher and Coach**

Glenelg Country School

Taught Geometry, Algebra II, Pre-Calculus, Spanish III, and AP Spanish Language. Coached Varsity field hockey at small private high school in Glenelg, Maryland.

1989-1991 **High School Teacher and Coach**

George School

Taught Geometry, Algebra II, Pre-Calculus and Spanish II and II. Coached field hockey and lacrosse and served as a dorm parent at a large private boarding school in Newtown, Pennsylvania.

TEACHING EXPERIENCE

Spring 2020 Associate Professor, CCOM 4029, "High Level Programming Languages" (undergraduate elective) UPRRP
Spring 2020 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Fall 2019 Associate Professor, CCOM 3031, "Introduction to Data Science" (undergraduate elective course) UPRRP
Fall 2019 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2019 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2019 Associate Professor, CCOM 4995, "Introduction to Data Science" (undergraduate elective) UPRRP
Fall 2018 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2018 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2018 Associate Professor, CCOM 4995, "Biomedical Big Data I" (undergraduate elective) UPRRP
Spring 2017 Associate Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Fall 2016 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Fall 2016 Assistant Professor, CCOM 4995, "Biomedical Big Data I" (undergraduate elective) UPRRP
Spring 2016 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2016 Assistant Professor, "Integrating Computational Thinking into the High Schools of Puerto Rico" CEA-UPRRP
Fall 2015 Assistant Professor, CCOM 4995, "Biomedical Big Data I" (undergraduate elective) UPRRP
Fall 2015 Assistant Professor, CCOM 4030, "Software Engineering" (undergraduate required course) UPRRP
Spring 2015 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2015 Assistant Professor, CCOM 3034, "Data Structures" (undergraduate required course) UPRRP
Spring 2015 Assistant Professor, "Integrating Computational Thinking into the High Schools of Puerto Rico" CEA-UPRRP
Fall 2014 Assistant Professor, CCOM 3034, "Data Structures" (undergraduate required course) UPRRP
Fall 2014 Assistant Professor, CCOM 3981, "Seminar in Computer Science" (undergraduate required course) UPRRP
Spring 2014 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2014 Assistant Professor, CCOM 3034, "Data Structures" (undergraduate required course) UPRRP
Fall 2013 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Spring 2013 Assistant Professor, CCOM 4027, "Introduction to Data Management" (undergraduate required course) UPRRP
Fall 2012 Assistant Professor, CCOM 3030, "Introduction to Computer Science" (undergraduate required course) UPRRP
Fall 2011 Teaching Assistant, CMSC 202, "Computer Science II for Majors" (undergraduate required course) UMBC
Fall 2010 Instructor, CMSC 201, "Computer Science I for Majors" (undergraduate required course) UMBC
Fall 2009 Instructor, CMSC 104, "Problem Solving and Computer Programming" (undergraduate elective) UMBC
Fall 2007 Instructor, CMSC 341, "Data Structures" (undergraduate required class) UMBC
Spring 2006 Teaching Assistant, CMSC 202, "Computer Science II for Majors" (undergraduate required course) UMBC
Fall 2005 Instructor, CMSC 104, "Problem Solving and Computer Programming" (undergraduate elective) UMBC
1991-1996 High school math and Spanish teacher and Varsity field hockey coach, Glenelg Country School
1989-1991 High school math and Spanish teacher, field hockey and lacrosse coach, and dorm teacher, George School

CURRENT LEADERSHIP & MENTORING ACTIVITIES

2020 Women in Data Science Ambassador, Puerto Rico (<https://www.widsconference.org/ambassadors-2020.html>).

Member, Board of Directors, Code Explorers (<http://codeexplorers.org>), March 2015 – present.

UPRRP Representative, NCWIT, Partner Institution, fall 2016 – present.

UPRRP Representative, AccessComputing, Partner Institution, September 2016 – present.

Member, CS4All, September 2016 – present.

Co-Founder, CS4All Puerto Rico (<http://cs4allpr.org>), summer 2016 – present.

Co-Lead, Expanding Computing Education Pathways Puerto Rico Cohort, spring 2015 – present.

Co-Coordinator, World Computer Exchange – Puerto Rico, spring 2015 – present.

Co-Lead, Puerto Rico Partnering Institutions, Center for Brains, Minds, Machinery, MIT, winter 2013 – present.

PAST LEADERSHIP & MENTORING ACTIVITIES

Coordinator, Connecting Pathways Outreach Trip, Jayuya, PR, January 19, 2019.
Coordinator, Connecting Pathways Outreach Trip, Jayuya, PR, November 18, 2018.
Coordinator, Thinking like a Designer Workshop, San Juan, PR, August 13-16, 2018.
Co-Founder and Co-leader, CS4All Puerto Rico Symposium, San Juan, PR, January 23, 2018.
Mentor Chair, Meshing with Data Hackathon, Bayamón, PR, June 29, 2018- July 1, 2018.
Founding Co-Advisor, Computer Science Teachers' Association, spring 2016 – 2018.
Founding Co-Advisor, TechniCoop, first UPRRP and UHS student cooperative for technical services, 2016 – 2017.
Organizing Chair, Healthcare Innovation Replicathon, 36 hour hackathon to replicate experiments in Data Science academic papers, San Juan, PR, March 24-25, 2017. <https://idi-bd2k.hpcf.upr.edu/2017/03/29/healthcare-innovation-replicathon-2017-and-data-carpentry-instructor-training/>
Co-Founder and Co-leader, CS4All Puerto Rico Symposium, San Juan, PR, September 22, 2016.
Co-leader, Health Mini-Hackathon, 2016 HIT (Health Informatics Tools) Workshop, Medellín, Colombia, July 27-28, 2016.
Leader, Educational Nano-Hackathon, Inaugural Project Kaleidoscope Meeting in Puerto Rico, Humacao, January 28-29, 2016.
Founder and Chair, Organizing Committee of the Symposium of Health Informatics for Latin America and the Caribbean (SHILAC 2015), San Juan, PR, November 20-22, 2015. <http://shilac.org>
Founder, Biomedical Data Science Workshop (BDSW cra.org/cra-w/biomedical-data-science-workshop-shilac-2015), San Juan, PR, November 20-22, 2015.
Founder and Chair, Hacking Health in the Caribbean hackathon as part of SHILAC 2015, November 20-22, 2015.
Founder and Chair, Organizing Committee, Symposium of Health Informatics for Latin America and the Caribbean (SHILAC 2013), Cancun, MX, August 14, 2013.
Moderator, “TED-styled talks by PROMISE alumni: Research on Healthcare,” Summer Success Institute, Baltimore, MD, August 17, 2013.
Peer Mentor, PROMISE, Maryland's AGEP (Alliance for Graduate Education and the Professoriate), fall 2007 – spring 2012.
Invited Speaker in a 3-day seminar at Pontificia Javeriana University in Bogotá, Colombia and its affiliated hospital to analyze how information technology could improve daily health and clinical practices within the scope of the current state of biomedical informatics in Colombia, March 2-4, 2011. (See Invited Presentations)
Program Committee Member, IEEE VisWeek Workshop on Visual Analytics in Health Care, Salt Lake City, Utah, October 24, 2010.
Graduate Student Representative, UMBC President's Commission on Women, fall 2008 - spring 2010.
President, WISE Grads, the Women in Science and Engineering Graduate Association, 2008 - 2010.
Vice President, WISE Grads, the Women in Science and Engineering Graduate Association, 2007 - 2008.
Treasurer, WISE Grads, the Women in Science and Engineering Graduate Association, 2006 - 2007.
Creator of peer mentoring program for new graduate students in CSEE department, fall 2006 & 2007.
Creator and Coordinator of Graduate Student Panel and Lab Tours for new graduate students to CSEE department during orientation, August 2006 & 2007.

THESIS & DISSERTATION COMMITTEES & SCIENCE PROJECTS

Mentor of Bachelors Thesis, Juanita Rosario, “El Proceso Creativo como método de innovación en los hospitales pediátricos,” Universidad del Turabo, San Juan, PR, March 2017.

President of Dissertation Committee, Luis Alberto García Nevares, “Localización e internacionalización de software: puntos de encuentro entre el localizador y el programador,” Universidad de Salamanca, Salamanca, Spain, November 4, 2016.

Advisor of Bachelors Thesis, Orlando Rivera, “Analysis of Time Series of Different Lengths,” University of Puerto Rico Río Piedras, San Juan, PR, September 2015.

Mentor of High School Science Project, Natalia Pacheco and Andrea Claudio, “Development of an Open Source Speech-driven Programming Platform,” The Intel International Science and Engineering Fair, University of Puerto Rico High School, San Juan, PR, October 2016. Tied for first place in Puerto Rico.

<http://www.elnuevodia.com/ciencia/ciencia/nota/estudiantesusansuingenioparamejoramuestracalidaddevida-2019437/>

PEER-REVIEWED PUBLICATIONS

Jimmy Phuong, Christina Bandaragoda, Shefali Haldar, Kari Stephens, Patricia Ordóñez, Sean Mooney, and Andrea Hartzler. “Information needs and use-cases to improve population health research in future hurricanes and floods: a research focus for disaster preparedness,” Journal of the American Medical Informatics Association, Special Edition, under review.

Patricia Ordóñez Franco, Juan S. Ramírez, Humberto Ortiz Zuazaga, María Eglée Pérez Hernández, Luis Pericchi, José E. García Arrarás, “Enhancing Undergraduate Education and Curriculum through an Interdisciplinary and Quantitative Initiative

to Broaden Participation in Big Data,” In Proceedings of the 18th LACCEI International Multi-Conference for Engineering, Education, and Technology: “Engineering, Integration, And Alliances for A Sustainable Development” “Hemispheric Cooperation for Competitiveness and Prosperity on A Knowledge-Based Economy,” Buenos Aires, Argentina, July 29-31, under review.

Patricia Ordóñez Franco, María Eglée Pérez Hernández, Humberto Ortiz Zuázaga, José García Arrarás, “Building a Data Science Program through Hackathons and Informal Training in Puerto Rico,” *Leveraging Data in Global Health*, Switzerland: Springer Nature, to appear July 2020.

Patricia Ordóñez Franco, María Eglee Pérez Hernández, Humberto Ortiz Zuázaga, “Estimulando la innovación en Ciencia de Datos Interdisciplinaria a través de ‘Hackathons’,” In Proceedings of the 16th LACCEI International Multi-Conference for Engineering, Education, and Technology: “Innovation in Education and Inclusion,” Lima, Peru, July 19-21, 2018.

Patricia Ordóñez, Joseph Carroll-Miranda, María López Delgado, Eliud Gerena, Grace Rodríguez. “Incorporating Computational Thinking in the Classrooms of Puerto Rico: How a MOOC served as an outreach and recruitment tool for Computer Science Education,” Proceedings of the Special Interest Group in Computer Science Education Annual Conference, Baltimore, MD, February 22, 2018.

Renetta Tull, Autumn Reed, Pamela Felder, Shawnisha Hester, Denise Williams, Yarazeth Medina, Amanda Lo, Erika Aparaka, Patricia Ordóñez, “Hashtag #ThinkBigDiversity: Social Media Hacking Activities as Hybridized Mentoring Mechanisms for Underrepresented Minorities in STEM,” Proceedings of the American Society for Engineering Education Annual Conference, Columbus, Ohio, June 27, 2017.

Patricia Ordóñez, Nelson Schwartz, Adnel Figueroa-Jiménez, Leonardo A. García Lebron, Abiel Roche, “Learning Stochastic Finite-State Transducer to Predict Individual Patient Outcomes,” Health and Technology, Springer, 2016.

Kavita Krishnaswamy, Patricia Ordóñez, Phillip Beckerle, Stephan Rinderknecht, Torsten Felzer. “OnScreenDualScribe with Point-and-Click Interface: A viable computer interaction alternative based on a virtual modified numerical keypad.” Proceedings of ASSETS 2016, Reno, NV, October 2016.

Renetta G. Tull, Patricia Ordóñez, Frances Carter-Johnson, Beatrice Zayas, Angela Byars-Winston, M. Cortes-Rodriguez, “The Jessica Effect: Valuing Cultural and Familial Connections to Broaden Success in Academe,” AAC&U Peer Review, Spring 2014.

Patricia Ordóñez, Kavita Krishnaswamy, Renetta G. Tull, Dan Ding, Mary Goldberg, “Assistive technology research as a mechanism to broaden the participation of women, underrepresented minorities, and persons with disabilities,” in Proceedings of the Twelfth LACCEI Latin American and Caribbean Conference for Engineering and Technology, 2014.

Patricia Ordóñez, Michael Brennan, Carol Hullin, Juan Carlos Puyana, “Promoting and Showcasing Health Informatics in Latin America and the Caribbean through Interdisciplinary Collaboration,” in Proceedings of the Twelfth LACCEI Latin American and Caribbean Conference for Engineering and Technology, 2014.

Frances D. Carter-Johnson, Patricia Ordóñez, Renetta G. Tull, and Miguel Nino. “Examining the Intersection of Graduate Student Funding, Mentoring, and Training as a Mechanism of Success for Peer Mentors and their Mentees.” 120th Annual Conference of the American Association of Engineering Education, ASEE 2013, Atlanta, GA, June 2013.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, Christoph U. Lehmann, “Multivariate Methods for Classifying Physiological Data,” Workshop on Data Mining Medicine and HealthCare (DMMH 2013) at 2013 SIAM International Conference on Data Mining, Austin, TX, 37-45, December 2013.

Patricia Ordóñez, Tim Oates, Michael Lombardi, Genaro Hernández, Kathryn W. Holmes, Jim Fackler, and Christoph U. Lehmann, “Visualization of Multivariate Time Series Data in a Neonatal ICU,” IBM Journal of Research and Development, Special Issue on Technologies for Healthcare Transformation 2012, 56(5), 7:1-12, August 2012.

Frances D. Carter-Johnson, Patricia Ordóñez, and Renetta G. Tull. Peer Mentoring and Graduate Student Funding: an Emerging Professional Development Intervention for Peer Mentors and their Mentees. (Abstract). 5th Annual Conference on Understanding Interventions that Broaden Participation in Research Careers (UI5), Baltimore, May 10-12, 2012.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, “Classification of patients using novel multivariate time series representations of physiological data,” in Proceedings of International Conference on Machine Learning and Applications (ICMLA 2011 Special Session in Medicine), Honolulu, HI, 2:172-179, December 2011.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, “Using modified multivariate bag-of-words models to classify physiological data,” in Proceedings of the Workshop on Mining Multiple Information Sources (MMIS 2011) in the International Conference on Data Mining Workshops (ICDMW), Vancouver, CA, 534-539, 2011.

Patricia Ordóñez, Marie desJardins, Michael Lombardi, Christoph U. Lehmann, Jim Fackler, “An Animated Multivariate Visualization for Physiological and Clinical Data in the ICU,” in Proceedings of First ACM International Health Informatics Symposium (IHI '10), ACM, New York, NY, 771-779, November 2010.

Christoph U. Lehmann, Patricia Ordóñez, Jim Fackler, Kathryn Holmes, “Practical Visualization of Multivariate Time Series Data in a Neonatal ICU,” accepted in Visual Analytics in Health Care Workshop (VAHC 2010), Salt Lake City, UT, <http://research.ihost.com/vahc2010/program.html>, October 2010.

Patricia Ordóñez, Marie desJardins, “Multivariate Time Series Analysis of Clinical and Physiological Data,” in Proceedings of Grace Hopper Celebration of Women in Computing 2010, Atlanta, GA, p.31-36, 2010.

Patricia Ordóñez, Marie desJardins, Carolyn Feltes, Christoph U. Lehmann, Jim Fackler, “Visualizing Multivariate Time Series Data to Detect Specific Medical Conditions,” in Proceedings of American Medical Informatics Association (AMIA) 2008 Annual Symposium, Washington, DC, 6: 530-534, 2008.

James Rhodes, Stephen Boyer, Jeffrey Kreulen, Ying Chen, Patricia Ordóñez, “Mining Patents Using Molecular Similarity Search,” in Proceedings of Pacific Symposium on Biocomputing, Honolulu, HI, 12:304-315, 2007.

INVITED JOURNALS, CONFERENCE PUBLICATIONS & WORKSHOP REPORTS

Renata Rawlings-Goss, Lillian Cassel, Melissa Cragin, Catherine Cramer, Angela Dingle, Shawnta Friday-Stroud, Al Herron, Nicholas Horton, Tasha R. Inniss, Kari Jordan, Patti Ordóñez, Mary Rudis, Robert Rwebangira, Karl Schmitt, Dale Smith, Sonya Stephens, “Keeping Data Science Broad: Negotiating the Digital and Data Divide Among Higher Education Institutions,” Report released by South Big Data Hub Education and Workforce Working Group Workshop to be reported to the National Academies Meeting on Envisioning the Undergraduate Data Science Discipline, Washington, DC, December 6, 2017.

Patricia Ordóñez, Health Informatics, “Finding Solutions Together,” CIO Latino Online Journal, February 2016.

Patricia Ordóñez, Palanivel Kodeswaran, Vlad Korolev, Wenjia Li, Onkar Walavalkar, Ben Elgamil, Anupam Joshi, Tim Finin, Yelena Yesha, “A Ubiquitous Context-Aware Environment for Surgical Training,” in Proceedings of the First International Conference on Mobile and Ubiquitous Context Aware Systems and Applications, MUBICA , p. 1-6, 2007.

PEER-REVIEWED SCIENTIFIC ABSTRACTS, POSTERS, PANELS & PRESENTATIONS

Patricia Ordóñez Franco, Humberto Ortiz Zuazaga, and Juan S. Ramírez, “Broadening Participation in Computing through a Biology Summer Research Experience for Undergraduates” in Proceedings of 2020 RESPECT Conference, online poster and abstract, March 4, 2020.

Patricia Ordóñez, “The Need for Mutually Beneficial Collaborations to Broaden the Participation of Hispanics in Data Science,” in Proceedings of 2020 RESPECT Conference, Lightning Talk online, March 4, 2020.

Joseph Carroll-Miranda, Patricia Ordóñez, Edusmildo Orozco, Mila Bravo, Michelle Borrero, Luis López, Gerriann Houser, Eliud Gerena, Dale Reed, Brenda Santiago, Agustín Corchado, and Andreska Santana. “This is What Diversity Looks Like: Making ECS Culturally Relevant for Spanish-speaking Puerto Ricans.” In Proceedings of ACM SIGCSE Symposium (SIGCSE 2019), Minneapolis, Minnesota, workshop, March 1, 2019.

Leigh Ann DeLyser, Barbara Ericson, Patricia Ordóñez, Loretta Cheeks, “It's Never Too Late, Brianna Morrison,” Grace Hopper Celebration of Women in Computing, Houston, TX, panel, September 28, 2018.

Helen Hu, Joanna Goode, Patricia Ordóñez, “Five Days that Changed my Teaching,” 2018 TAPIA Celebration of Diversity in Computing, Orlando, FL, workshop, September 21, 2018.

Patricia Ordóñez, Omar Florez, Juan Gilbert, Vicente Ordóñez, Brianna Posadas, Kori Inkpen, “Dealing with Bias and Unfairness in Machine Learning Algorithms,” 2018 TAPIA Celebration of Diversity in Computing, Orlando, FL, panel, September 21, 2018.

Edusmildo Orozco, Michelle Borrero, Joseph Carroll-Miranda, Patricia Ordóñez, Luis López, Agustín Corchado, Gerrian Houser, Eliud Gerena, Andreshka Santana, Explorando la Ciencia de Cómputos para Puerto Rico. In Proceedings of Seminario Interuniversitario de Investigación en Ciencias Matemáticas (SIDIM 2018), San Juan, PR, March 23-24, 2018.

Patricia Ordóñez, Joseph Carroll-Miranda, María López Delgado, Eliud Gerena, Grace Rodríguez. “Incorporating Computational Thinking in the Classrooms of Puerto Rico: How a MOOC served as an outreach and recruitment tool for Computer Science Education,” Special Interest Group in Computer Science Education Annual Conference, Baltimore, MD, presentation, February 22, 2018.

Renetta Tull, Autumn Reed, Pamela Felder, Shawnisha Hester, Denise Williams, Yarazeth Medina, Amanda Lo, Erika Aparaka, Patricia Ordonez, Social Media Hacking Activities as Hybridized Mentoring Mechanisms for Underrepresented Minorities in STEM, American Society for Engineering Education Global Colloquium, Azores, Portugal, presentation, September 2017.

Grace M Rodriguez, Marvis Cruz, Andrew Solis, Patricia Ordóñez, Brian C McCann, An immersive approach to visualizing perceptual disturbances, in Proceedings of IEEE Virtual Reality (VR) Conference, Los Angeles, CA, March 20, 2017.

Panelist, Pathways to Graduate School in STEM, Salisbury University, February 10, 2017.

Abiel Roche, Patricia Ordóñez, “Classification of Physiological Data for Intelligent Decision-aid Tools in Intensive Care Units,” Machine Learning for Health Workshop co-located with Neural Information Processing Systems (NIPS 2016), Barcelona, Spain, December 9, 2016, poster.

Patricia Ordóñez, Abiel Roche, “Classification of Physiological Data for Intelligent Decision-aid Tools in Intensive Care Units,” Women in Machine Learning Workshop co-located with Neural Information Processing Systems (NIPS 2016), Barcelona, Spain, December 9, 2016, poster.

Patricia Ordóñez, “Increasing Diversity in Interdisciplinary Biomedical Big Data”, NIH All Hands BD2K Meeting, Washington, DC, November 29, 2016, oral.

Abiel Roche, Patricia Ordóñez, “Supervised Learning Methods based on Finite-State Transducers to Classify Physiological Data,” extended abstract, NIPS 2015 Workshop on Machine Learning in Healthcare, Montreal, Canada, December 11, 2015, poster.

Jean Karlo Rodriguez-Cartagena, Andrea Claudio-Palacios, Natalia Pacheco-Tallaj, Valerie Santiago-González, Patricia Ordóñez-Franco, “Implementation of a Vocabulary and Grammar for an Open-Source Speech-Recognition Programming Platform,” 17th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS) 2015, extended abstract for Demo, Lisbon, Portugal, October 26, 2015, poster and demo. Placed second in the competition.

Efrain Ramos, Patricia Ordóñez, “Multivariate Time Series Analysis,” CAHSI Summit, San Juan, PR, September 10, 2015, poster.

Xiomara Figueroa, Patricia Ordóñez, “Improving Programming Interfaces for People with Limited Mobility Using Voice Recognition,” 16th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2014, Seattle, Washington, October 20, 2014, poster.

Patricia Ordóñez, “Assistive technology research as a mechanism to broaden the participation of women, underrepresented minorities, and persons with disabilities,” Latin American and the Caribbean Consortium of Engineering Institutions Conference, Guayaquil, Ecuador, July 23, 2014, oral.

Patricia Ordóñez, “Promoting and Showcasing Health Informatics in Latin America and the Caribbean through Interdisciplinary Collaboration,” Latin American and the Caribbean Consortium of Engineering Institutions Conference, Guayaquil, Ecuador, July 24, 2014, oral.

Patricia Ordóñez, “Machine Learning the World Cup, Medicine and Neuroscience,” Center for Brain, Minds, and Machines, MIT, Cambridge, Massachusetts, July 9, 2014, oral.

Orlando R. Rivera Pérez, Patricia Ordóñez, “Analysis of Time Series Data of Varying Lengths,” in Proceedings of the Inter-University Mathematical Sciences Research Seminar (SIDIM 2014), Ponce, PR, March 1, 2014, poster.

Patricia Ordóñez, “The Do Good Scientist,” Caribbean Celebration of Women in Computing 2014, Aguadilla, PR, February 27, 2014, oral.

Patricia Ordóñez, “A Health Informatics Research Project: using visual analytics to improve care for premature infants in hospitals,” Caribbean Celebration of Women in Computing 2014, Aguadilla, PR, February 27, 2014, oral.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, Christoph U. Lehman, “Multivariate Methods for Classifying Physiological Data,” Symposium of Complex Medical Data 2013, Los Angeles, CA, August 16, 2013, oral.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, Christoph U. Lehman, “Multivariate Methods for Classifying Physiological Data,” Workshop on Data Mining Medicine and HealthCare (DMMH 2013), Austin, TX, May 4, 2013, oral.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, “Classification of patients using novel multivariate time series representations of physiological data,” International Conference on Machine Learning and Applications 2011, Honolulu, Hawaii, December 19, 2011, oral.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, “Using modified multivariate bag-of-words models to classify physiological data,” Mining Multiple Information Sources Workshop at the International Conference on Data Mining 2011, Vancouver, Canada, December 11, 2011, oral.

Patricia Ordóñez, Tom Armstrong, Tim Oates, Jim Fackler, “Classification of Multivariate Vital Signs Data Using Stacked Bags-of-Patterns,” Meaning Use of Complex Medical Data Symposium 2011, Los Angeles, CA, August 27, 2011, poster & oral.

Patricia Ordóñez, Tim Oates, Michael Lombardi, Jim Fackler, Kathryn W. Holmes, Christoph U. Lehmann, “A Practical Visualization of Physiological and Clinical Data for All Intensive Care Units,” Meaning Use of Complex Medical Data Symposium 2011, Los Angeles, CA, August 27, 2011, poster & oral.

Patricia Ordóñez, Marie desJardins, Michael Lombardi, Christoph U. Lehmann, Jim Fackler, “An Animated Multivariate Visualization for Physiological and Clinical Data in the ICU,” First ACM International Health Informatics Symposium (IHI '10), Arlington, VA, November 12, 2010, poster.

Christoph U. Lehmann, Patricia Ordóñez, Jim Fackler, Kathryn Holmes, “Practical Visualization of Multivariate Time Series Data in a Neonatal ICU,” Visual Analytics in Health Care Workshop (VAHC 2010), Salt Lake City, UT, October 24, 2010, oral.

Patricia Ordóñez, Marie desJardins, “Multivariate Time Series Analysis of Clinical and Physiological Data,” PhD Forum of Grace Hopper Celebration of Women in Computing 2010, Atlanta, GA, September 29, 2010, oral.

Patricia Ordóñez, Marie desJardins, Tim Oates, Kathryn Holmes, Christoph U. Lehmann, Jim Fackler, “Multivariate Time Series Analysis of Physiological and Clinical Data,” Computer Science and Electrical Engineering Research Review, UMBC, May 7, 2010, poster.

Patricia Ordóñez, “Visualizing Clinical and Medical Data using a Multivariate Temporal Perspective,” Graduate Research Conference, UMBC, April 30, 2010, oral.

Patricia Ordóñez, “Multivariate Time-Series Analysis of Physiological and Clinical Data,” Future Faculty Career Exploration Program (FFCEP 2009), Rochester Institute of Technology, Rochester, NY, September 24, 2009, oral.

Patricia Ordóñez, Marie desJardins, Carolyn Feltes, Christoph U. Lehmann, Jim Fackler, “Multivariate Time Series Analysis of Physiological and Clinical Data,” International Conference on Machine Learning (ICML 2009), Montreal, Canada, July 22, 2009, oral.

Patricia Ordóñez, “A Multivariate Time-Series Visualization of a Clinical and Physiological Data,” Graduate Research Conference, UMBC, April 24, 2009, oral.

Patricia Ordóñez, Marie desJardins, Carolyn Feltes, Christoph U. Lehmann, Jim Fackler, “Visualizing and Clustering Multivariate Time Series Data to Detect Medical Conditions,” North-Eastern Student Colloquium on Artificial Intelligence (NESCAI 2008), Ithaca, NY, May 4, 2008, poster.

Patricia Ordóñez, Palanivel Kodeswaran, Anupam Joshi, “Traumapod,” CSEE Review Day, UMBC, May 4, 2007, poster. Also, at the UMBC Graduate Research Conference (GRC), UMBC, April 27, 2007, poster.

Patricia Ordóñez, Sheetal Agarwal, Anupam Joshi, "Context Aware Surgical Training (CAST)," CSEE Review, UMBC, May 5, 2006, poster. Also, at the UMBC GRC, UMBC, April 28, 2006, poster.

Patricia Ordóñez, Anupam Joshi, "Context Aware Surgical Training Center," PROMISE Research Symposium, University of Maryland, College Park (UMCP), College Park, MD, January 23, 2006, poster.

INVITED/HIGH PROFILE/INTERNATIONAL PRESENTATIONS & PANELS

Patricia Ordóñez, "Ciencia de Datos en Salud Digital," Universidad Católica de Temuco, Temuco Chile, in-person workshop and online course, June 8, 2019.

Patricia Ordóñez, "La Importancia de Ciencia de Datos Después de Huracán María," Make Health Chile, Universidad Católica de Chile, Santiago, Chile, oral, June 5, 2019.

Patricia Ordóñez, "La Importancia de Ciencia de Datos Después de Huracán María," Make Health Colombia, Universidad Javeriana, Bogotá, Colombia, oral, December 13, 2019.

Fernando Portilla (moderador), Walter Suarez, Mauricio Rodríguez, Pablo Orefice, Patricia Ordóñez, "Transformación Digital en el Sistema de Salud Colombiano Digital", Make Health Colombia, Universidad de los Andes, panel, December 12, 2019.

Patricia Ordóñez, "I can CS!", Broadening Participation in Data Mining Workshop, Washington, DC, February 23, 2019.

Patricia Ordóñez, "Equity in Data and Computer Science", Conference on the Importance of Programming in Statistics, Promoting More Participation of Women, Puerto Rico Institute of Statistics, Gurabo, PR, 9 marzo 2018.

Patricia Ordóñez, "Helping to Prepare Women and People of Color for a Career in the Sciences," Amherst College, Amherst, MA, January 16, 2018.

Patricia Ordóñez, "Spurring Innovation and Diversity in Interdisciplinary Biomedical Data Science through Hackathons in Puerto Rico," Amherst College, Amherst, MA, January 16, 2018.

Shirley Malcolm, Tina Brower-Thomas, Maribel Vazquez, Judy Brown-Clarke, Patricia Ordóñez, Lizanne DiStefano, "A Seat at the Table: Integrating MSIs into the STCs," NSF Science Technology Centers Directors Meeting, panel, Arlington, VA, August 29, 2017.

Patricia Ordóñez, Lynn Johnson Langer, Kenneth Sembach, Marguerite Hoyt, Camille Daniel, Beverly Wendland, Ashley J. Llorens, "Hidden Figures: More than Just Numbers," Johns Hopkins Alumni Network, Senator Theater, Baltimore, MD, January 29, 2017.

Patricia Ordóñez, "Spurring Innovation in Healthcare and Equity," Universidad de Salamanca, Salamanca, Spain, November 3, 2016.

Patricia Ordóñez, "Spurring Innovation in Healthcare in Latin America and the Caribbean." 2016 Health Informatics Tools Workshop, Medellín, Colombia, July 27, 2016.

Gretchen Díaz, Lucy Crespo, Michelle Martínez, Patricia Ordóñez, Giovanna Guerrero, "Entre Borinqueñas: Historias de Mujeres en STEM," Puerto Rico Science, Research and Technology Trust, San Juan, PR, March 31, 2016, panel.

Patricia Ordóñez, "The Importance of Creating Programs in Technology for the Older Generations of Puerto Rico" Cenas Empresariales, Foundation for Puerto Rico, San Juan, PR, April 23, 2016.

Panelist, Semillas del Triunfo: Programa de Embajadoras del STEM, Panel, Ciencia PR, Universidad de Puerto Rico, Humacao, September 5, 2015.

Patricia Ordóñez, "A Collaborative and Interdisciplinary Project to Promote Health Informatics in Latin America and the Caribbean." Simposio: Las Tecnologías de Información y la Salud Móvil: Lecciones Aprendidas y Desafíos para América Latina y el Mundo, Lima, Perú, March 20, 2015.

Panelist, "Career Choices" panel at CienciaPR 2013 Symposium, San Juan, PR, October 2013.

Patricia Ordóñez, "A Collaborative and Interdisciplinary Project to Promote Global Health," Informatics Training for Global Health Network Meeting at NIH, Bethesda, MD, September 13, 2013.

Patricia Ordóñez, “An Animated Multivariate Visualization of Clinical and Physiological Data in a Neonatal ICU,” Center for Advanced Information Management Technology Forum at Columbia University titled “Imaging, Visualization, and Simulation: New Tools for Technology and Healthcare,” New York Academy of Sciences, New York, NY, June 17, 2011.

Patricia Ordóñez, “Informática Biomédica,” Pontificia Universidad Javeriana, Bogotá, Colombia, March 2, 2011.

Patricia Ordóñez, “Análisis Temporales sobre Múltiples Variables de Información Fisiológica y Clínica,” Pontificia Universidad Javeriana, Bogotá, Colombia, March 2, 2011.

OTHER PEER-REVIEWED PROPOSALS for Presentations and Panels at Conferences

Patricia Ordóñez (moderator), Kori Inkpen, Brianna Posadas, Juan Gilbert, “Dealing with Unfairness and Bias in AI,” 2019 Tapia Celebration of Diversity in Computing, San Diego, CA, September 2019, panel.

Lilliam Casillas, Patricia Ordóñez, “Teaching to Increase Equity in STEM (TIDES): Empowering Underrepresented using culturally-responsive strategies and tackling bias,” 2019 Tapia Celebration of Diversity in Computing, San Diego, CA, panel, September 2019, workshop.

Patricia Ordóñez, Nery Chaptón-Lamas, Juan F. Sequeda, Brianna Posadas, “Hispanics in Computing Community” 2019 Tapia Celebration of Diversity in Computing, San Diego, CA, September 19, 2019, Birds of a Feather.

Yajaira González, Patricia Ordóñez, Zaira Vallenilla “Got a CS or CSE bachelors, now what?” Caribbean Celebration of Women in Computing, Mayaguez, PR, April 9, 2016, panel.

Patricia Ordóñez, “Increasing Diversity in Computer Science through Interdisciplinary Collaborations,” Caribbean Celebration of Women in Computing 2015, Mayaguez, PR, April 9, 2016, oral.

Patricia Ordóñez, Dale Reed, Helen H. Hu, Joanna Goode, “Five Days that Transformed My Teaching,” Special Interest Group of Computer Science Education Conference (SIGCSE 2015), special session, not accepted.

Patricia Ordóñez, “A Competitive Sports Model for the CS Curriculum,” Special Interest Group of Computer Science Education Conference (SIGCSE 2015), lightening talk, not accepted.

Patricia Ordóñez, Heidi Ellis, Darci Burdge, Becka Morgan, Karen Alkoby, “Using Humanitarian Free and Open Source Software (HFOSS) to Attract the Underrepresented to Computer Science,” Tapia Celebration of Diversity in Computing Conference 2015, panel.

Patricia Ordóñez, Mini-grant Proposal for travel of Keynote Speaker, Karen Alkoby, to the Caribbean Celebration of Women in Computing 2014, Access Computing, \$786, partially funded.

Patricia Ordóñez, “Diversity among Hispanics – Who are we and how can we get out of the shallow end?” Tapia Celebration of Diversity in Computing 2014, panel.

Patricia Ordóñez, “The \$10 Million Dollar Plan: Increasing Graduate Funding and Diversity in Computing” Tapia Celebration of Diversity in Computing 2014, workshop.

Patricia Ordóñez, Mini-grant Proposal for travel for panelist Karen Alkoby to Grace Hopper Celebration of Women in Computing 2013 Panel “Getting Out of the Shallow End: Techniques for empowering and encouraging underrepresented women in computing,” Access Computing, \$1225, accepted.

Patricia Ordóñez, “Getting Out of the Shallow End: Techniques for empowering and encouraging underrepresented women in computing,” Grace Hopper Celebration of Women in Computing 2013, panel.

Panelist, “Career Choices,” Broadening Participation in Data Mining Workshop 2013, Chicago, IL, August 2013, panel.

Panelist, “Career Choices,” Tapia Celebration of Computing 2013, Washington, DC, February 2013, panel.

Patricia Ordóñez, “How to Fund Your Graduate Education,” Tapia Celebration of Diversity in Computing 2012, not accepted.

Patricia Ordóñez, Kavita Krishnaswamy, “Understanding the experience of underrepresented women in graduate school,” Tapia Celebration of Diversity in Computing 2012, not accepted.

Patricia Ordóñez, Kavita Krishnaswamy, “Understanding the experience of underrepresented women in graduate school,” Grace Hopper Celebration of Women in Computing 2012, not accepted.

OTHER PRESENTATIONS

- Patricia Ordóñez, “How to Fund Your Graduate Education,” Explore Computing Research Conference , Mayaguez, PR, March 16, 2019.
- Patricia Ordóñez, Frances D. Carter-Johnson, Lola Brown, “How to Fund Your Graduate Education,” Summer Success Institute, Baltimore, MD, August 18, 2017.
- Patricia Ordóñez, “How to Write a Successful Personal Statement,” IDI-BD2K Seminar, URPRP, San Juan, PR, October 31, 2016.
- Patricia Ordóñez, “Why is Computational Thinking Important?” CS4All Summit 2016, San Juan, PR, September 22, 2016.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Write a Successful Personal Statement,” UMBC Student Success Seminar, Baltimore, MD, September 10, 2016.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Fund Your Graduate Education,” UMBC Student Success Seminar, Baltimore, MD, September 10, 2016.
- Patricia Ordóñez, Alexis Williams, “Sisters in the Dissertation House,” PROMISE Summer Success Institute, Baltimore, MD, August 19, 2016.
- Patricia Ordóñez, "SHILAC and the Varmed Super Utilizer Challenge" Invited Speaker for Inaugural Healthcare Innovation Summit, San Juan, PR, May 6, 2016.
- Patricia Ordóñez, “Include Girls and SHILAC: Initiatives to recruit more Latinas into the Computational Sciences”, Invited Speaker for Inaugural Project Kaleidoscope Meeting in Puerto Rico, Humacao, January 28, 2016.
- Patricia Ordóñez, “Equity and Computer Science Education,” Invited Speaker for Inaugural Project Kaleidoscope Meeting in Puerto Rico, Humacao, January 28, 2016.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Write a Successful Personal Statement,” UMBC Student Success Seminar, Baltimore, MD, September 6, 2015.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Fund Your Graduate Education,” UMBC Student Success Seminar, Baltimore, MD, September 6, 2015.
- Patricia Ordóñez and Joseph Carroll-Miranda, “What is computational thinking and why is it important?” First Learning Technologies Institute: Tensions and Tendencies. University of Puerto Rico Río Piedras, San Juan, PR, November 7, 2014.
- Darcy Burge, Becka Morgan, Patricia Ordóñez, Karen Alkoby, “Humanitarian Free and Open Source Software: Motivating the Underrepresented,” GHC 2015, Houston, Texas, October 14, 2015, panel.
- Patricia Ordóñez, “How to Write a Successful Personal Statement,” University of Puerto Rico Río Piedras, San Juan, PR, September 19, 2014.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Write a Successful Personal Statement,” UMBC Student Success Seminar, Baltimore, MD, September 6, 2014.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Fund Your Graduate Education,” UMBC Student Success Seminar, Baltimore, MD, September 6, 2014.
- Patricia Ordóñez, Frances D. Carter-Johnson, “How to Fund Your Graduate Education,” MIT Summer Research Program, Cambridge, MA, July 10, 2014.
- Patricia Ordóñez, Jorge Ortiz-Carpena, Edwin Rosado, “How to Fund Your Graduate Education,” University of Puerto Rico Río Piedras, San Juan, PR, May 14, 2014.
- Patricia Ordóñez and Frances Carter-Johnson, “The \$10 Million Dollar Plan: Increasing Graduate Funding and Diversity in Computing” Tapia Celebration of Diversity in Computing 2014, Seattle, WA, February 7, 2014.
- Patricia Ordóñez, Manuel Perez-Quñones, Carlos Evia, Jane Margolis, Nayda Santiago, “Diversity among Hispanics – Who are we and how can we get out of the shallow end?” Tapia Celebration of Diversity in Computing 2014, Seattle, WA, February 6, 2014.
- Patricia Ordóñez, “Cómo financiar sus estudios graduados – componentes claves de buenas propuestas de becas,” Ciencia PR, University of Puerto Rico Medical Sciences Campus, San Juan, PR, October 19, 2013.
- Patricia Ordóñez, “How to Write a Personal Statement,” University of Puerto Rico Río Piedras, San Juan, PR, October 10, 2013.
- Patricia Ordóñez, “How to Apply for the National Science Foundation Graduate Research Program,” University of Puerto Rico Río Piedras, San Juan, PR, October 10, 2013.
- Patricia Ordóñez, Tom Armstrong, Karen Alkoby, Kavita Krishnaswamy, Joanna Goode, “Getting Out of the Shallow End: Techniques for empowering and encouraging underrepresented women in computing,” Grace Hopper Celebration of Women in Computing 2013 Panel, October 4, 2013.
- Patricia Ordóñez and Andrea Grimes Parker, “Graduate School Survival Skills,” CRA-W Graduate Panel Series at Grace Hopper Celebration of Women in Computing Conference, Minneapolis, MN, October 2, 2013.
- Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” Spelman College, Atlanta, GA, September 22, 2013.
- Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” Clemson University, Clemson, SC, September 21, 2013.

Patricia Ordóñez, Frances D. Carter-Johnson, “Funding Your Graduate Education Workshop,” UMBC Student Success Seminar, Baltimore, MD, September 7, 2013.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” MIT Summer Research Program, Cambridge, MA, July 28, 2013.

Patricia Ordóñez, Nora Álvarez, Nicole Aponte, Sean Kelly, María Ocasio, “How to Write a Personal Statement,” University of Puerto Rico Río Piedras, San Juan, PR, May 2, 2013.

Patricia Ordóñez, Frances D. Carter-Johnson, “Funding Your Graduate Education Workshop,” UMBC Student Success Seminar, Baltimore, MD, September 15, 2012.

Patricia Ordóñez, “How to Fund Your Graduate Education,” University of Puerto Rico Río Piedras, San Juan, PR, September 5, 2012.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” MIT Summer Research Program, Cambridge, MA, June 21, 2012.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” Harvard School of Engineering and Applied Sciences Research Experience for Undergraduates Program, Cambridge, MA, June 21, 2012.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” UMBC Student Success Seminar, Baltimore, MD, September 17, 2011.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” MIT Summer Research Program, Cambridge, MA, July 28, 2011.

Patricia Ordóñez, “Multivariate Time Series Analysis of Clinical and Physiological Data,” Tufts University, Computer Science Department, Medford, MA February 24, 2011.

Patricia Ordóñez, Frances D. Carter, “How to Fund Your Graduate Education,” MIT Summer Research Program, Cambridge, MA, June 15, 2010.

Patricia Ordóñez, Frances D. Carter, “How to Prepare Application for the National Science Foundation’s Graduate Research Fellowship,” UMBC, September 23, 2009.

Panelist on Fellowship Panel for the MIT Summer Research Program, Cambridge, MA, July 21, 2009.

Panelist at UMBC President’s Commission on Women Women’s Leadership Summit, “Sharing our Stories; Lessons on the Path to Leadership,” UMBC, April 15, 2009.

Patricia Ordóñez, Frances D. Carter, “How to Prepare Application for the National Science Foundation’s Graduate Research Fellowship,” UMBC, September 17, 2008.

Panelist in PROMISE Summer Success Institute, “Developing Your Support Systems as a Graduate Student,” UMCP, College Park, MD, August 16, 2008.

Patricia Ordóñez, Frances D. Carter, “How to Prepare Application for the National Science Foundation’s Graduate Research Fellowship,” UMBC, September 27, 2007.

Presenter, Computer Mania Day, “Launching Yourself into Cyber Space,” UMBC, May 2006 & 2007.

Guest Lecturer on several occasions at UMBC for CMSC 601 (Basic Research Methods), CMSC 471 (Principles of Artificial Intelligence), CMSC 331 (Principles of Programming Languages), CMSC 203 (Discrete Math), CMSC 201 (Computer Science I) and FYS 102A & 102D (Investigating Everyday Problems & Their Current IT Solutions), fall 2006 - present.

FUNDED RESEARCH PROPOSALS

Interdisciplinary and Quantitative Biology Research Experience for Undergraduates (IQ-Bio-REU), NSF-REU, \$334,302. Duration: January 1, 2019 – December 31, 2021. PI: Juan Ramirez-Lugo Co-PI: Patricia Ordóñez.

Exploring Computer Science in Puerto Rico, CS4All: RPP, \$300,000. Duration: November 1, 2017-October 31, 2019, PI: Edusmildo Orozco, Co-PIs: Luis Lopez, Joseph Carroll-Miranda, Michelle Borrero, Agustin Corchado, Collaborator: Patricia Ordóñez.

Training the Trainer in ECS-PR PD, Exploring Computing Education Pathways Mini-grant, \$21,700. Duration: Summer 2017. PI: Joseph Carroll-Miranda Co-PIs: Patricia Ordóñez, Edusmildo Orozco, Luis López, Agustín Corchado.

Increasing Diversity in Interdisciplinary Big Data to Knowledge (IDI-BD2K), NIH- BD2K, \$1,067,600. Duration: 9/1/2015-08/31/2020. PI: José García Arrarás. Co-PIs: María E. Pérez, Patricia Ordóñez.

Translating and implementing a culturally relevant Exploring Computer Science curriculum for Puerto Rico (ECS-PR), Exploring Computing Education Pathways Mini-grant, \$20,000. Duration: 12/1/2015-12/31/16. PI: Joseph Carroll-Miranda Co-PIs: Patricia Ordóñez, Edusmildo Orozco, Agustín Corchado, Luis López.

Biomedical Data Science Workshop, CRA-W/CDC, \$30,000 (direct award to supported students), Duration: 11/20/2015-11/22/2015. PI: Patricia Ordóñez Co-PIs: Tyrone Grandison, Aury Curbelo.

Training the Trainer in Exploring Computer Science, Exploring Computing Education Pathways Mini-grant, \$25,000. Duration: 06/1/2015-08/31/15. PI: Edusmildo Orozco Co-PIs: Joseph Carroll-Miranda, Patricia Ordóñez, Agustín Corchado, Luis López.

Academics and Training for the Advancement of Cybersecurity Knowledge in Puerto Rico (ATAACK PR), NSF-SFS, \$299,982, Duration: 09/01/2014-08/31/2017. PI: José Ortiz-Ubarri Co-PIs: Rafael Arce Nazario, Humberto Ortiz Zuázaga, Patricia Ordóñez.

Integrating Computational Thinking into the High School Curriculum in Puerto Rico, Google CS4HS, \$18,000. Duration: 5/2014-6/2016. PI: Joseph Carroll-Miranda Co-PI: Patricia Ordóñez.

Multivariate Time Series Analysis of Physiological and Clinical Data to Predict Patent Ductus Arteriosus(PDA) in Neo-Natal Patients (CRA-W Collaborative Research Experiences for Undergraduates (CREU)), \$20,000 (direct award to supported students). Duration: 8/10–8/11. Co-PIs: Patricia Ordóñez, Marie desJardins, and Kathryn Holmes.

SUBMITTED RESEARCH PROPOSALS

Interdisciplinary and Quantitative Biology Research Experience for Undergraduates (IQ-Bio-REU), NSF-REU, \$352,693. Duration: January 1, 2018 – December 31, 2020. PI: Juan Ramirez-Lugo Co-PI: Patricia Ordóñez, not funded.

Latin@s in ACTION (Advancing Computational Thinking to Improve Opportunities Nationwide), NSF STEM+C, \$244,037. Duration: 9/1/2017-8/30/2020. PI: Joseph Carroll-Miranda and Co-PI: Patricia Ordóñez, not funded.

Classification and Visualization of Physiological Data for Intelligent Mobile Decision-aid Tools for Intensive Care Units, Puerto Rico Science, Technology and Research Trust, Small Research Grant Program, \$70,000. Duration: 1/1/2017-06-2018. PI: Abiel Roche Lima, co-PI: Patricia Ordóñez, not funded.

Can a MOOC for high school teachers increase diversity in a university CS program? (CRA-W Collaborative Research Experiences for Undergraduates (CREU)), \$15,500 (direct award to undergraduate students). Co-PIs: Patricia Ordóñez, Joseph Carroll-Miranda, not funded.

Increasing Diversity in Computer Science through the Adoption of a CS Curriculum and of a Peer Mentoring Model for High School Teachers in Puerto Rico, Fondos Institucionales Para la Investigación (FIPI), Decanto de Estudios Graduados e Investigación, \$17,770. Co-PIs: Patricia Ordóñez Franco, Joseph Carroll Miranda, not funded.

Usability Evaluation (CRA-W CREU), 2013, \$7,000 (direct award to support one undergraduate student). Co-PIs: Patricia Ordóñez and Melissa López Serrano, not funded.

INVITED WORKSHOPS/FORUMS/MEETINGS

2020 Make Health Chile, June 4-5, 2019, Santiago, Chile.

2020 Make Health Colombia, December 12-13, 2019, Bogotá, Colombia.

2019 AccessComputing DO-IT Workshop, February 20-22, 2019, Seattle, WA.

2018 SouthBDHub's and DataUp's Carpentries Train the Trainer Workshop, November 7-8, 2018, Atlanta, GA.

2018 Pre-SIGCSE POSSE (Professors' Open Source Summer Experience) Roundup, February 20, 2018, Baltimore, MD.

2018 Exploring Computer Science Professional Development Workshop (ECS-PR PD 2018), June 25-29, 2018, San Juan, PR.

2017 "Keeping Data Science Broad: Workshop on Negotiating the Digital and Data Divide," SouthBDHub, October 31-November 1, Atlanta, GA.

2017 STEM Women of Color Conclave and Leadership Academy, September 30-October 2, Ellicott City, MD.

2017 Academic Career Workshop for Underrepresented Junior Faculty and Senior Graduate Students, April 6-9, Houston, TX.

2017 Computer Science for All Workshop, January 11-13, Los Angeles, CA.

2016 ECEP Face-to-Face Annual Meeting, October 28-29, Washington, DC.

2016 White House Symposium on State Implementation of Computer Science for All, October 28, Washington, DC.

2016 Microsoft Research Faculty Summit 2014, June 13 (12-14), Redmond, WA.

2015 CBMM Annual Meeting and Poster Session, August 22, Boston, MA.

2015 ECEP Face-to-Face Annual Meeting, August 15, Charlotte, NC.

2015 CRA-W/CDC Career Mentoring Workshop, June 13-14, Portland, OR.

2014 Exploring Computer Science Professional Development Workshop (ECS PD 2014), June 16-20, Los Angeles, CA.

2014 STEM Women of Color Conclave, June 8-9, 2017, Herndon, VA.

2014 Professors' Open Source Summer Experience (POSSE 2014), May 26-28, Philadelphia, PA.

2014 Quantitative Biology Workshop of MIT Department of Biology, January 3-10, Cambridge, MA.

2014 Center for Brains, Minds, and Machinery Outreach Workshop, January 9-11, Cambridge, MA.

2013 Summer Success Institute, August 17, Baltimore, MD.

2013 Broadening Participation in Data Mining, August 9 -10, Chicago, IL.

2013 Hispanic-Serving Health Professional Schools (HSHPS) Networking Event (July 24-25) in Bethesda, MD.

2013 Academic Career Workshop for Underrepresented Junior Faculty and Senior Graduate Students, June, Chicago, IL.
2013 Affinity Research Groups Workshop, June, Miami, FL.
2013 Professors' Open Source Summer Experience (POSSE 2013), June, Philadelphia, PA.
2012 MIT Media Lab's Innovation and Wellness Event, January, MIT, Cambridge, MA. Team earned second place in event.
2011 Inaugural Hacking Medicine Event, January, MIT, Cambridge, MA.
2011 Women's PhD Networking Event, GE Global Research in Niskayuna, NY.
2010 Innovations of the Surgical Environment in Annapolis, MD
2010 Academic Careers Workshop in Houston, TX.
2010 Google Grad CS Forum in San Francisco, CA.
2009 RIT Future Faculty Exploration Program in Rochester, NY.
2009 CRA-W Career Mentoring Workshop in Pasadena, CA.
2007 Women's Institute for Summer Enrichment (WISE) at University of California, Berkeley.
2007 BIRS (Banff International Research Station) Mentoring Workshop for Engineering Academia II, Banff, Canada.

REQUIRED WORKSHOPS

Gestión y Obtención de Fondos Externos (3 hours), October 19, 2013.
Ética en los procesos de enseñanza (2 hours), October 11, 2013.
Tendencias Tecnológicas en los Procesos de Enseñanza-Aprendizaje (2 hours), October 11, 2013.
Orientación Institucional a Profesores Nuevos 2013 (6 hours), August 5, 2013.
Time & Effort (3 hours), December 5, 2012.

SKILLS

Programming Languages: Perl, Java, C, C++, JavaScript, Python, MATLAB, R.
Web Technologies: HTML, CSS, JavaScript, Bootstrap.
Databases: Oracle SQL & PL/SQL, MySQL, FileMaker.
Operating Systems: Linux, Windows, Mac OS.
IDEs: Eclipse, NetBeans, WSAD.
Linguistic: Bilingual in English/Spanish; proficient in French; knowledge of Portuguese, German, and Italian.

SERVICE ACTIVITIES

Editor, Leveraging Data for Global Health, Springer Nature, Switzerland, to appear 2020.
Reviewer, NIH, January 2019.
Reviewer, Respect Conference, December 2018.
Reviewer, NCWIT Academic Alliance Seed Fund, November 2018.
Reviewer, AAAI Conference, October 2018.
Reviewer, 2019 AAAI (Association for the Advancement of Artificial Intelligence) Conference, October 2018.
Reviewer, National Science Foundation, December 2017- January 2018
Advisory Board Member, Annie Cannons (<http://anniecannons.com>), December 2014 – 2018.
Reviewer, Journal of Applied Clinical Informatics, April 2017.
Judge and Mentor, Hacked por una Causa, San Juan, PR, March 31 – April 2, 2017
UMBC Alumni Representative, Advisory Committee, PROMISE, Maryland's Alliance for Graduate Education and the Professoriate (<http://promiseagep.wordpress.com>), fall 2012 – 2016.
Founding Advisor, #include < girls> (<http://includegirls.com>), October 2013 – 2016.
Member, Steering Committee (Comité Timón) of the Faculty of Natural Sciences for Creating Certifications, UPRRP, fall 2015 - fall 2016.
Reviewer, National Institutes of Health, January 2017.
Mentor, Include <a-thon>, assistive technology hackathon from #include <girls>, October 22-23, 2016.
Reviewer, International Medical Informatics Association Yearbook of Medical Informatics, January 2016.
Reviewer, Journal of Applied Clinical Informatics, December 2015.
Reviewer, Journal of Applied Clinical Informatics, September 2015.
Reviewer, CAHSI Summit Scholarship, August 2015.
Reviewer, Journal of Intelligent and Robotic Systems, November 2014.
Reviewer, Tapia Celebration of Diversity in Computing Scholarship, October 2014.
Reviewer, Journal of American Medical Informatics, July 2014.
Reviewer, Journal of Intelligent and Robotic Systems, June 2014.
Reviewer, National Science Foundation, May 2014.
Reviewer, Journal of Applied Clinical Informatics, March 2014
Reviewer, National Science Foundation, January 2014.
Reviewer, National Science Foundation, January 2013.
Search Committee Member for the Director of UMBC Women's Center from 2009-2010.

Search Committee Member for two tenure track Assistant Professor positions in the Computer Science and Electrical Engineering department from 2009-2010.

Mentor, Include-a-thon, fashion show and hackathon for #include <girls>, October 3-4, 2015.

Participant, LittleFe Buildout at SIGCSE 2013, Denver, CO, and brought 12 node cluster to home campus, April 2013.

Judge, Doctoral Symposium, Tapia Celebration of Diversity Conference 2013, Washington, DC, February 2013.

CURRENT PROJECTS - EDUCATION

Exploring Computer Science in Puerto Rico

This project began as a collaboration with the Into the Loop Broadening Participation Alliance (BPA) when two professor attended the Exploring Computer Science Professional Development (ECS PD) workshop in the summer of 2014 to consider whether the ECS curriculum would serve as a good curriculum for Puerto Rico. The project was then established as a collaboration with the Exploring Computing Education Pathways (ECEP) BPA, which sponsored a Train the Trainer grant where we send 3 professors, 3 pre-service teachers and 4 in-service teachers to the different ECS PD across the country in the summer of 2015. Of the teachers, four attempted to teach the course in the following academic year. It was evident that the curriculum needed to be translated so we received a second grant from ECEP to translate the grant and named the new Spanish curriculum ECS-PR. A third grant will run the ECS-PR PD in Spanish in Puerto Rico in the summer of 2017.

Co-Principal Investigators: Joseph Carroll Miranda, Agustín Corchado, Luis López, Edusmildo Orozco

Former students: María López Delgado, Yaradzet Delgado Rivera, Gerriann J Houser De Jesus

Computer Science for All in Puerto Rico

CS4All PR is a project that aims to create and carry out a strategic plan to incorporate a quality and equitable computer science curriculum for all students in K-12 through collaborative impact. The project has held two CS4All Puerto Rico Summits sponsored by the Puerto Rico Information and Technology Cluster. We are joining efforts with the World Computer Exchange and the Computer Science Teachers Association Puerto Rico Chapter to establish a backbone organization for Computer Science Education (CSE) and have collaborative impact to incorporate CSE in all the schools of PR (<http://cs4allpr.org>).

Collaborators: Joseph Carroll Miranda, Timothy Anderson, Mayné González, Roberto Nieves, Andrea Barrientos

World Computer Exchange Puerto Rico Chapter and Computers for Girls

I am currently on the Steering Committee of 10 and the co-coordinator for the World Computer Exchange Puerto Rico Chapter. The WCE-PR's field research revealed that upwards of 40% of the computers and networks in Puerto Rico schools do not work. Moreover, budgets and capacity are limited to repair these computers. The WCE-PR aims to organize volunteers who can train teachers and students to install, troubleshoot, and repair technology, not only providing technology career readiness and know-how in the community, but also creating a socially and environmentally responsible movement to recycle e-waste and repair and refurbish computers that can be saved. The WCE-PR's Sustainable e-Waste Initiative will 1) repair computers in schools, 2) use them as a resource for training, and 3) take dead computers to a facility where students learn how to disassemble computers and salvage working parts. The objective is to make computers more accessible and to build self-efficacy in students and teachers regarding technology (https://worldcomputerexchange.org/puerto_rico/). Computers for Girls (C4G) is an initiative within the WCE where they are looking for and developing content for these computers that are directed at encouraging Latinxs students and teachers in computer science in Spanish (<https://worldcomputerexchange.org/computers-for-girls/>). I have represented the WCE in meetups around the island and helped build the relationship between WCE-PR and UPR Río Piedras, UPR Ponce, the Kinesis Foundation and the Flamboyán Foundations.

Collaborators: Timothy Anderson (President of WCE), Agustín Corchado, Joseph Carroll Miranda

CURRENT PROJECTS in BIOMEDICAL BIG DATA SCIENCE

Sonification of Vital Sign Data

Newest project is looking at whether there is a way to represent univariate times series data through music. The work is in the beginning stages and achieved in collaboration with Dr. Carsten Skarke of the Institute of Translational Medicine and Therapeutics at the University of Pennsylvania. Current student: Lilliana Marrero.

Interdisciplinary and Quantitative Biology Research Experience for Undergraduates (IQ BIO REU)

The Interdisciplinary and Quantitative Biology Research Experience for Undergraduates (IQ BIO REU) is a summer research and student development program funded by the National Science Foundation (NSF) that offers opportunities for undergraduate students from universities and colleges that lack a strong research component and those from groups that have been historically underrepresented in STEM fields. For 9 weeks, starting on the first Monday of June, ten (10) students will be immersed in a wide array of high-impact practices including participation in a mentored research project in partnership with faculty members from the College of Natural Sciences at the University of Puerto Rico-Río Piedras Campus (UPR-RP). The program offers training and practice for fluency in quantitative skills, data analysis, and bioinformatics and myriad opportunities for career development. I was in charge of creating workshops and a hackathon for the students and the general public as well as helping others to develop their computational research (<http://iqbioreu.uprrp.edu/>)

Increasing Diversity in Interdisciplinary Big Data to Knowledge (IDI-BD2K)

The Increasing Diversity in Interdisciplinary BD2K (IDI-BD2K) Project is an NIH funded initiative that aims to increase the diversity of the BD2K scientific community by increasing the number of underrepresented researchers, both students and faculty, in Big Data Science and its applications to biomedical research. Our IDI-BD2K project presents a series of activities that attracts students to the field of Biomedical Data Science, provides them with the courses and training necessary to perform Big Data research and directs them to participate in “hands-on” Interdisciplinary Biomedical Big Data research experiences, and creates a community of BD2K researchers at UPR Río Piedras. The IDI-BD2K program objective is to enhance student preparation and support so they continue onto graduate studies in Big Data Research and eventually enter the academic and professional community of investigators doing Biomedical Big Data research. To achieve our goals, UPR-RP has partnered with BD2K centers at Harvard University, the University of Pittsburgh and the University of California Santa Cruz to offer summer research experiences to at least 6 of our undergraduate students per year. The program also offers opportunities for faculty to develop their research and expertise in Big Data Research through sabbaticals and workshops with the BD2K Center faculty. In addition, the development and integration of new courses, workshops, seminars, and online course modules in Big Data Science into the undergraduate curricula of the Natural Sciences College serves to expand the research infrastructure and capabilities of the UPR-RP researchers and increases the UPR-RP's contribution in the field of Big Data Science, which permeates all of modern science and technology. This initiative is leading to the development of a Data Science Program at UPRRP. I have been in charge of leading the hackathon and workshop initiatives which included **2015 Hacking Health Health in Puerto Rico** (<http://shilac.org/>), **2016 HealthCare Innovation Replicathon** (<https://idi-bd2k.hpcf.upr.edu/2017/03/29/healthcare-innovation-replicathon-2017-and-data-carpentry-instructor-training/>), **2018 Meshing with Data** (<https://engine-4.com/event/meshing-with-data-hackathon/>), **2019 IQ Hackathon** (<https://sites.google.com/a/upr.edu/iq-hackathon/>), and the **2020 Women in Data Science Conference** (<http://widspuertorico.org/>) to increase the number of women in Data Science in Puerto Rico. Two remaining events are the online **IQ Hackathon** in July 2020 and **Make Health Puerto Rico** in January 2021.

The Kavita Project

The Kavita Project is focused on developing a generic, spoken, C-based programming language (Kavita) in an open source speech recognition software, SIMON, so that more people will be able to code. The framework that is being integrated into the open source software is being referred to as SIMON CODES. The framework is being designed so that it can crowd sourced and people can use it with different IDEs, editors and C-based programming languages. The project is named after Kavita Krishnaswamy, a PhD student at UMBC who inspired the project. It is designed for anyone who may have limited mobility in their hands, but wants to program. Another group of students started to create an interface that could interpret sign language for the programming language. The premise is that creating different modes to program might attract even more people to code. More information about the project can be found at <https://kavitaproject.blogspot.com/>. The demo was presented in ASSETS 2015 in Lisbon, Portugal and won second place out of 20 teams. Former students: Xiomara Figueroa, Karlo Martínez, Gustavo Gratacós, Natalia Pacheco, Andrea Claudio, Rafael Esparra, Jessica Pagan, Valerie Santiago, Roxana González, José Montero.

In February of 2020, the Project was revived and I am working in collaboration with Dr. Keith Vertanen and his PhD student Sadia Norwin of the Michigan Technical University to do a survey of how students read code in Java, C, C++ and Python as a preliminary step in developing a voice interface for the Framework. Students currently participating in the research are Dayanlee De Leon, Angel Ramos and Andres Rosner.

PREVIOUS PROJECTS

Healthcare Innovation Replicathon

A replicathon is a type of hackathon developed to promote the field of biomedical data science. The objective of the Replicathon is to meet the challenge. The participants are given two papers that interpret the results of one dataset in completely two different ways. The organizers provide the dataset and the data science mentors to help the participants develop their analysis in Jupyter notebooks while mentors from industry help the participants to communicate their findings in a presentation. The winners are judged by a team of data scientists and people from industry. This event was funded by Varmed Management Corporation, the R-25 Increasing Diversity in Interdisciplinary Big Data to Knowledge of the UPRRP, and Abartys Health.

Symposium of Health Informatics in Latin America and the Caribbean (SHILAC) and Hacking Health in the Caribbean

As founder and chair of the Symposium of Health Informatics in Latin America and the Caribbean with the primary objective of identifying common health issues in LAC that may be addressed with informatics such as public health issues and highlight the importance of collaborative solutions that include a wide array of disciplines and that include decision makers. Other objectives include showcasing the health informatics research and industry in LAC and describing the challenges and lessons learned from them, and brainstorming how to bridge the gaps among disciplines to develop more collaborative and diverse research and industry teams for more efficient solutions to health informatics issues in developing countries. In SHILAC 2015 **Hacking Health in the Caribbean** was a hackathon that was incorporated into the program with the additional objective of solving healthcare problems and implementing computational and informatics solutions for developing and developed countries. The Computing Research Association funded the **Biomedical Data Science Workshop** that was held in conjunction

with SHILAC to bring students from across the US to the event. Funding for the event came from over 10 companies as seen on the website. SHILAC 2013 took place in Cancun, MX, and SHILAC 2015 in San Juan, PR (<http://shilac.org>).

Multivariate Time Series Analysis

This project is a continuation of my dissertation research. In collaboration with physicians at Johns Hopkins University and my advisors at UMBC, I developed techniques for the Neonatal and Pediatric Intensive Care Units to provide clinical decision support. We created a visualization tool to assist providers in analyzing the patient's data from a multivariate perspective over time. I am currently working on developing a similarity metric that will assist physicians in determining how similar a patient is to another physiologically and in terms of experiencing similar medical events using Machine Learning techniques. I am also expanding the visualization. A presentation on an older version of the visualization as well as a technique for data mining multivariate time series data can be seen at <https://www.youtube.com/watch?v=HFQt1aO0drg>.

Former Students: Heriberto Acosta Maestro, Nitza Agosto, Melissa López Serrano, Orlando Rivera, Jean Karlo Rodríguez Cartagena, Leonardo García Lebrón, Nelson Schwartz

Computer Science for High Schools in Puerto Rico

This Google-sponsored project under its CS4HS program consists of offering a MOOC once a year for high school teachers of Puerto Rico, however, anyone can join. The course is designed as an outreach tool to recruit the future computer science teachers of Puerto Rico and to build the self-efficacy of all teachers in computing and in how to incorporate computational thinking into their curriculum. Videos and more information about the project can be found at <http://cs4hspuertorico.org/>. Currently looking for funding to continue the project. From this initiative the Computer Science Teachers' Association of Puerto Rico was born, now renamed as the CSTEACHERS Puerto Rico Chapter. (<http://csteachers.org/puertorico>).

Co-Principal Investigator: Joseph Carroll Miranda

Former Students: María López Delgado, Grace Rodríguez, Eliud Torres, Wendy Figueroa, Roxana González, Xiomara Figueroa

Anima

This project started as an interdisciplinary project to attract women into programming and resulted in becoming a one semester long, interdisciplinary project to entice people into cleaning up the neighboring college town of Río Piedras through a video game. Students belonged to the Department of Computer Science, the School of Architecture or the School of Communications. More information can be found at <https://animariopiedras.wordpress.com/>.

Former Students: Carlo Rodríguez and Roberto Feliu

Multivariate Time Series Analysis of Physiological and Clinical Data to Predict Patent Ductus Arteriosus (PDA) in Neonatal Patients and Traumatic Brain Injuries

This project was funded by the CRA-W and the CDC (Coalition for Diversity in Computing) while I was a graduate student with Marie desJardins, my advisor, and Kathryn Holmes, a physician at Johns Hopkins, as a Collaborative Research Experience for Undergraduates (CREU). I mentored and lead four underrepresented students in STEM; one in computer science, another in computer engineering, and another in biology. All three helped me to design a survey with residents at Johns Hopkins Hospital to evaluate how well residents can diagnose patients with PDA using our visualization and clinical decision support tool versus the traditional visualizations. A fourth computer science student helped improve the visualization using information gained from the previous pilot. More information about the project can be found at <http://creu2010-umbc.wikis.org>.

Former Students: Michael Lombardi, Erica George, Chris Mai, Ima Udofa, and Ofek Lev.

I also mentored a second group in vital signs datamining for my advisor, Tim Oates in collaboration with Tom Armstrong of Wheaton College and his students, Sedra Davis and Amanda D'Adamo. Website of the collaboration can be found at <https://vitalsignsdatamining.wordpress.com>.

Former Students: Laura Anzaldi and Amanda Hartman

Context Aware Surgical Training (CAST)

CAST was developed to create an environment where pervasive technologies, agent technologies, Semantic Web ontologies, logic reasoning, security and privacy policies, and RFID (radio frequency identifier) technology were being developed to extend the capabilities of the MASTRI Center, a surgical training facility located at the University of Maryland Medical School under guidance of Dr. Anupam Joshi and Dr. Tim Finin. The project was in its development stage when I was a part of it, thus my contribution to the project consisted of creating a web application for a surgical training curriculum through which residents could train in the MASTRI center on their own time and the application would keep a log of where they were in their training. Former collaborator: Palani Kodeswaran

Traumapod

In this project, I worked as part of the eBiquity lab in collaboration with DARPA, SRI, the University of Maryland Medical School, and several other universities to develop a prototype for an unmanned medical treatment vessel that will provide life-saving surgical and medical care to soldiers on the battlefield immediately after trauma and during transport. Other partners are developing the robotics that will allow a surgeon to operate on a soldier in the trauma pod remotely. eBiquity's major role in

the project was to create and to maintain the Resource Management Subsystem which monitors all the messages that are passed between the subsystems in order to track the inventory of supplies and tools. We were also responsible for Emergency Medical Record in the project which is an electronic medical record that maintains a time-stamped log of the events in the Trauma Pod for a procedure. My role in the project was to improve the GUI interface, improve the system's capacity to handle the number of messages it receives efficiently, and to serve as the liaison between SRI and UMBC to coordinate and perform the testing. eBiquity's role in the project ended on March 29, 2007.

Former collaborators: Palani Kodeswaran and Sheetal Agarwal

IBM's Chemical Search Engine

When I worked in an internship at IBM Almaden Research Center in San Jose, CA in the summer of 2006, I worked with a team of professionals on the IBM Chemical Search Engine. The search engine performs a molecular similarity search for patents and Medline articles and queries for associated metadata by cross referencing the resultant data. My research consisted of creating two interactive visualizations of the resultant data after a query. Previously, the visualization consisted of a single, complex table from which it was difficult to extract information. I constructed two views rather than clutter all the information into a single graph using the interactive visualization toolkit, Prefuse. The Graph View, on the left, emphasizes the relationships between patents and compounds, such as which patents name more than one compound. The Tree View, on the right, allows the user to focus on the data for a single compound. A paper on this work was published in the proceedings of the Pacific Symposium on Biocomputing 2002. My contribution to the paper was the generation and analysis of the experimental results. The visualizations were supposed to become a part of the web interface, but as a result of Prefuse and IBM licensing conflicts, it was not possible. Both visualizations were interactive.