CLARA MOSQUERA-LOPEZ

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SUMMARY

Research Scientist, with combined academic and industry experience, specializing in computational biology and medical systems design and development, with a strong background in biomedical signal processing, machine learning modeling, and data science. Proficient in utilizing a wide range of programming languages and machine learning software tools. Experienced in collaborating with cross-functional teams of medical professionals, engineers, researchers, and industry partners to design and translate cutting-edge solutions in the healthcare domain for the management of chronic conditions. Published multiple research papers in top-tier journals.

EXPERIENCE

Oregon Health & Science University, Portland, OR: Assistant Professor (current) Nov 2017 – Present

- Have held multiple positions starting as a Sr Research Associate in November 2017 and becoming a tenure-track Assistant Professor in July 2022.
- Have developed multiple ML algorithms to process large datasets containing wearable and smart home sensors data for applications in diabetes technologies including glucose prediction, insulin therapy optimization, meal events detection and meal size estimation; fall detection and real-time fall risk prediction in multiple sclerosis.
- Have collaborated with software engineers to incorporate developed ML algorithms into iPhone Decision Support app for people living with type 1 diabetes on multiple daily injections as well as into the Android *iPancreas* automated insulin delivery platform. These systems have been tested in feasibility clinical studies and demonstrated improvements in glucose outcomes (i.e., more time in target range and less time in hyperglycemia).
- Have performed processing and statistical analyses of data collected from clinical studies conducted by our research group.
- Have secured and managed research grants (approx. $860K) for developing algorithms for personalized diabetes therapy optimization and digital twin technologies.
- Have built intellectual property portfolio and have authored multiple articles in high impact journals including Nature Metabolism, Nature npj Digital Medicine, The Lancet Digital Health, Diabetes Technology & Therapeutics. See my list of publications on Google Scholar.
- Have presented my research work at national and international meetings.
- Started a new graduate-level course on machine learning and mathematical modeling in the Biomedical Engineering Department.
- Co-taught a graduate-level course on Digital Signal Processing and added new content on multi-resolution analysis and machine leaning modeling of time series.
- Have mentored interns and doctoral students working on computational biology and machine learning modeling projects.

Intel Corporation, Hillsboro, OR: Senior Imaging Scientst Aug 2015 – Nov 2017

- Job role was 80% software engineer and 20% data scientist, developing critical distributed image processing software in C++ and Python in a Linux environment.
- Developed image analysis pipelines allowing real-time lithography defect metrology on over two million pictures per week.
- Developed computational lithography analysis tool (back-end and front-end components) for accelerated creation of customized recipes for defect detection and metrology, resulting in 5x faster recipe development time. The tool included features for automated recommendation of image processing algorithms and corresponding parameters using unsupervised machine learning techniques.
- Received two department-level awards for developing image processing algorithms for model calibration and speeding up image processing recipe development time.
- My team received the 2016 Intel Technology Manufacturing Group (TMG) Excellence Award (Highest honors).

Multiple companies, USA and abroad: Consultant Jan 2013 – Present

- Executed multiple contracts as AI policy consultant with the World Economic Forum/Colombian Center for the Fourth Industrial Revolution (2019, 2020).
- Have consulted for multiple companies and regional governments abroad on projects related to innovation and technology management.

The University of Texas at San Antonio, San Antonio, TX: Graduate Assistant Jan 2012 – May 2015

- Developed computer vision system to assist pathologists in the detection and grading of prostate cancer from digitized whole-slide and tissue micro-array histopathology images, achieving diagnosis accuracy above 95%. Research work resulted in two patents (US 10,055,551 and US 10,192,099), and eight peer-reviewed papers and a book chapter published. See my list of publications on Google Scholar.
- Led recitation and review sessions for the Signals and Systems course and actively provided advice and assistance to undergraduate students as they conducted work in the Electrical and Computer Engineering Laboratory.

EDUCATION

MSc and PhD, Electrical Engineering Graduated May 2015
The University of Texas, San Antonio, TX 4.0/4.0 GPA
Klesse College of Engineering and Integrated Design

MSc, Management of Technology Graduated Oct 2010
Universidad Pontificia Bolivariana, Medellin, COL 4.65/5.0 GPA
College of Engineering

BSc, Electronics Engineering Graduated Apr 2007
Universidad Pontificia Bolivariana, Medellin, COL 4.57/5.0 GPA
College of Engineering

TECHNICAL SKILLS

Technical specialties: Computational biology, data analysis, applied machine learning, signal processing
Programming and scripting: Python, Matlab, C++, Bash
Data analysis, machine learning, and mathematical modeling: SQL, Pandas, Tensorflow, Scikit-learn, PyStan
Operating systems: Microsoft Windows, Linux
Version control systems: GIT
Languages: English (full professional proficiency), Spanish (Native)

HONORS & AWARDS

School of Medicine paper of the month 2023
First-author paper *"Modeling risk of hypoglycemia during and following physical activity in people with type 1 diabetes using explainable mixed-effects machine learning"* published in Computers in Biology and Medicine selected as best paper within the School of Medicine at Oregon Health & Science University in March 2023

New Investigator Award 2021
Reserach grant from the Oregon Medical Research Foundation to investigate key risk factors for exercise-induced hypoglycemia in type 1 diabetes using explainable machine learning.

Intel Corporation Award 2016, 2017
Two department-level awards for developing image processing algorithms for model calibration and speeding up image processing recipe development time.

AfroColombian of the Year 2015
Recognition for achievements in Science and Technology.

The University of Texas at San Antonio Graduate Fellowship 2014-2015
Competitive Graduate Fellowship from the Department of Electrical and Computer Engineering.

COLFUTURO Scholarship 2011-2013
Competitive graduate scholarship from the Foundation for the future of Colombia to study abroad.

ECOPETROL Scholarship 2002-2006
Scholarship from the Colombian Petroleum Company for undergraduate studies given to top-ranked regional students in the SAT-like test.