

Curriculum Vitae

Personal data

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Professional Profile

Dr. Flórez-Gómez enjoys working in the fields of scientific computing, machine learning, and high-performance computing, with a commitment to advancing research and education in these areas. He is actively involved in leading research projects, supervising master's students on topics like data analysis in mathematics and informatics competitions and autonomous systems for insect behavior studies, while also promoting STEM education through initiatives such as the Puerto Rico Informatics Olympiad (OiPR), which focus on problem-solving with programming and computational thinking.

Education

06/2018	PhD in Computing and Information Sciences and Engineering (CISE), University of Puerto Rico at Mayagüez (UPRM).
06/2007	MSc. in Scientific Computing, University of Puerto Rico at Mayagüez.
06/2003	BSc. in Licenciatura en Matemáticas, Universidad Industrial de Santander, Bucaramanga, Colombia.

Skills

Prog. Languages:	Java, C/C++, Python, Pascal, PHP, Perl, JavaScript, Common Lisp, Scheme, Racket, Haskell, and Elm.
APIs:	OpenMPI, Pthreads, OpenMP, CUDA.
Oper. Systems:	Unix/Linux, Windows, MS-DOS, MacOS.
Markup Lang.:	TeX/L ^A TeX, HTML.
Math Software:	Matlab, Scilab, Octave, Mathematica, Maple, Maxima, GeoGebra, WeBWorK, Jupyter Notebooks and R.
Single-Board Computers Hardware:	Raspberry Pi, Arduino & PyBoards.

Publications

Conf. Paper	A Survey on Digital Twin Networks: Use Cases and Enabling Technologies. Proceedings of the International Symposium on Intelligent Computing and Networking. Contributors: Dong Wang; Edwin Flórez-Gómez; Kejie Lu. DOI: https://doi.org/10.1007/978-3-031-67447-1_31 , 2024.
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Book	Tareas y soluciones Desafío BEBRAS PR 2023. https://www.uprm.edu/oipr/wp-content/uploads/sites/10/2024/10/LibroBebrasPR2023V4.pdf , Contributors: Team OiPR, 2024.
Conf. abstract	Augmented reality and its use in training and education. The Alabama Educational Technology Conference (AETC). Contributors: Amal Aljohani, Hiva Samadian and Edwin Flórez-Gómez, 2024.
Conf. abstract	Desafiando mentes jóvenes: Bebras y la Computación creativa. Seminario Interuniversitario de Investigación en Ciencias Matemáticas. Contributors: Team OiPR. 2024.
Book	Olimpiadas Matemáticas de Puerto Rico, ciclo 2022-2023, Collaborator, https://drive.google.com/file/d/1u7ZdXnZgfJ622eIbo0UaVpZB_PRQM6Kd , 2024.
Journal Paper	Statistical analysis of social factors influencing academic performance at the University of Puerto Rico's Business Faculty, Preprint, Contributors: Dr. Rafael Aparicio, Dr. Jairo Ayala, Dr. Oscar Castrillón and Dr. Daiver Velez from University of Puerto Rico. 2023.
Book	Olimpiadas Matemáticas de Puerto Rico, ciclo 2022-2023, Collaborator, https://drive.google.com/file/d/19CAqXxB0Ieom7_QebVM0i69gf0Up_poV , 2023.
Book	Olimpiadas Matemáticas de Puerto Rico, ciclo 2021-2022, Collaborator, https://drive.google.com/file/d/1IJ04WQt0aB4jfrZFxzplrHZZieT-gEaZ , 2022.

Research Projects

01/2024-present	Factores sociales que influyen en el rendimiento académico de los estudiantes. In collaboration with Dr. Rafael Aparicio, Dr. Jairo Ayala, Dr. Oscar Castrillón and Dr. Daiver Velez from University of Puerto Rico.
08/2022-present	Development of Automated Fluid Delivery System to Advance Neuroscience. In collaboration with Dr. José Agosto and Dr. Tugrul Giray from University of Puerto Rico at Rio Piedras.
01/2024-present	Implementation of an Unstructured 3D Mesh and Application of the Finite Element Method to Simulate the 2020 M6.4 Earthquake in Puerto Rico Using SPECFEM3D, Master Thesis, Scientific Computing Graduate Student: Daniel Melo.
06/2024-Present	Exploring Spotify's Algorithmic Recommendations for AI-Generated Songs and Human Compositions, CAHSI Local REU, CS Sub-graduate Student: Emilia Couret.
02/2024-06/2024	Multiple approaches to solving the classical N-Queens problem, CAHSI Local REU, CS Sub-graduate Student: Julian Soto.
06/2023-06/2024	Augmented reality and its use in training and education. In collaboration with Dr. Hiva Samadian from The University of Scranton and Amal Aljohani, PhD Student from Virginia Tech.
02/2023-2024	Implementación de la plataforma WeBWorK para el desarrollo de un sistema de tareas de matemáticas y estadística. Universidad Militar Nueva Granada.

	Bogotá, Colombia. External advisor. Managers: Prof. Eliseo Gallo Albarracín y Prof. Isnardo Arenas Navarro.
02/2022-12/2022	On existence of a strongly regular graph with $\lambda = 2$ and $\mu = 1$. PI Dr. Edwin Flórez, Co-PI Dr. Rafael Aparicio.
03/2022-12/2022	Autonomous Computer Aided Assessment System (CAA) using Single-Board Computers (SBCs). CAHSI Local REU. Students: Abner Ortiz, Jonathan Rodriguez.
2020-2021	Machine learning techniques in medical imaging-based diagnostics for cardiovascular diseases. Undergraduate Research. Students: Alexander Martinez, Carlos Gonzalez.
2020-2021	Strategies to minimize risk factors among health professionals. Undergraduate Research. Student: Britanie Nieves.
2019-2020	Long-term multi-parameter assessment of the impact of seasonality and Hurricane Maria on colony measures: A case study of Africanized Honey Bees in Puerto Rico. Undergraduate Research. Student: Stephanie L. Cruz.
2016-05/2018	A Novel Framework of Structured Measurement Matrix for Compressed Sensing in Wireless Sensor Networks. PhD thesis. Advisor: Dr. Kejie Lu.
08/2014-05/2015	Golden Number's decimal places behavior. High School research project in University Garden HS, PR with the student Gerilizar Martinez. Advisor.
Summer 2012	A simulated model for distribution of precision time signals using wireless mesh networks, MIT HayStack Observatory. Supported by the Pre-College Summer Research Internship program by AGMUS Institute of Mathematics in the Ana G. Mendez University System.
08/2011-08/2012	MRI: Development of a Versatile Service-Oriented Wireless Mesh Network for Disaster Relief and Environmental Monitoring in Puerto Rico. PI, PhD. Kejie Lu, Co-PI PhD. Domingo Rodríguez.
08/2011-06/2012	Improving the Curriculum of Electrical and Computer Engineering through A Wireless Network Testbed: A Vertical Integration Approach. PI, PhD. Kejie Lu.
12/2010	Winter 2010 Pre-College Research Symposium, CCCE Alliance. Poster winner: Wifi User Location by Fernando Sánchez Santiago.
05/2007	New Results in Tournament Matrices, Master thesis. Advisor: Dr. Xuerong Yong.

Talks

03/2024	Desafiando mentes jóvenes: Bebras y la Computación creativa. Seminario Interuniversitario de Investigación en Ciencias Matemáticas, University of Puerto Rico, Humacao Campus, 2024.
11/2023	Percepción de impacto en el uso de las tecnologías web de la enseñanza de cursos de matemáticas y estadística en estudiantes "Milenials". IX Coloquio

de Matemáticas Aplicadas y V Encuentro Internacional de Matemáticas Aplicadas, Cajicá, Colombia.

- 05/2023 La guagua de las ciencias de la computación. Students admitted for August 2023 to the UPRM Department of Mathematical Sciences.
- 03/2023 Discussion panel: Programs of Department of Mathematical Sciences UPRM. High school students in Puerto Rico interested in the Department's programs.
- 08/2022 Computer Science. Undergraduate program for new students in the Department of Mathematical Sciences at UPRM.
- 02/2022 Open house for graduate students in computing at UPRM, National and international graduate student candidates.
- 08/2021 Computer Science in UPRM. Undergraduate program for new students in the Department of Mathematical Sciences at UPRM.
- 03/2015 El hombre que calculaba. 27a. Olimpiada de Matemáticas Nivel Superior, UPR Rio Piedras, PR.
- 04/2012 Interdisciplinary approach for the development of scenarios and active learning materials. Symposium on Research in the Social Sciences (CISO), Mayaguez PR.
- 06/2010 Techno classes, Plenary Talks. Project MSP-UNE, August 13, 2010.
- 02/2007 University of Puerto Rico at Ponce. XXI Inter-university Research Seminar in Math Sciences. Further Results on Tournament Matrices.

Conferences/Workshop

- August 2023 LEVEL UP Workshop, Washington, DC.
- October 2022 Great Minds in STEM (GMIS) Pasadena, California.

Seminars/Summits

- 02/2023 University of Puerto Rico at Mayagüez. XXXVIII Inter-university Research Seminar in Mathematical Sciences. (Attender / Organizer)
- 05/2019 Fourth Biomedical Engineering Educational Summit Meeting. Addressing Skills for Career Success. Tinkhan Veale University, Cleveland, OH. (Attender)
- 01/2019 BioTech 82 Bio-informatics for Beginners.
- 02/2010 University of Puerto Rico at Mayagüez. XXV Inter-university Research Seminar in Mathematical Sciences. (Attender)
- 03/2009 University of Puerto Rico at Rio Piedras. XXIV Inter-university Research Seminar in Mathematical Sciences. (Attender)
- 02/2008 University of Puerto Rico at Carolina. XXIII Inter-university Research Seminar in Mathematical Sciences. (Attender)
- 02/2007 University of Puerto Rico at Ponce. XXII Inter-university Research Seminar in Mathematical Sciences. (Speaker)

Work Experience

2021 – Present	Assistant Professor, Department of Mathematical Sciences, University of Puerto Rico, Mayagüez Campus
2018 – 2021	Associate Professor, Polytechnic University of Puerto Rico: San Juan, PR
Aug.–2018	Partial time professor Interamerican University at Bayamón.
Aug.–2018	Partial time professor University of Puerto Rico at Humacao.
2007 – 2011	Instructor, University of Puerto Rico at Humacao: Humacao, PR
2012 – 2014	Teaching Assistant, Universidad Industrial de Santander: Bucaramanga, CO

Professional Experience

Jan.2023–present	Executive representative of Bebras Puerto Rico in the UPRM Mathematical Sciences Department. https://www.uprm.edu/bebras/
March2017–present	Web site developer and designer of the math teams online competition COMATEQ. http://comateq.pr
2016–present	Virtual machine administrator, builder and manager of websites: http://webwork.uprm.edu/webwork2 and http://webwork-test.uprm.edu/webwork2
2016–present	Problem selector and judge in the mathematics competition in different schools in Puerto Rico: Saint Francis School, Notre Dame School, CPN, University Gardens High School, Colegio Beato Carlos Manuel, Academia San José, Colegio Marista and Education Department of Puerto Rico.
2015–2018	Puerto Rico Interscholastic Math League member. Web Developer and designer. http://www.priml.pr
May–2015	Problems chooser and judge on the Second Cup Mathematics Brigida Alvarez Rodriguez at Vega Baja, PR.
Summer-2014	Builder and manager of the website: http://webwork.uprm.edu , and programming there math problems in the open WebWork Homework Online System.
2004–2007	University of Puerto Rico at Mayagüez, Department of Mathematical Sciences. • Webmaster: IFEM (Instituto para el Fortalecimiento de las Matemáticas). • Linux administrator: Graduate Student's Office.
2003–2004	Universidad Industrial de Santander, Mathematics Department. • Composer with $\text{\TeX}$/$\text{\LaTeX}$: Revista Integración.

Teaching Experience

2021-present	University of Puerto Rico at Mayagüez • Mathematical Sciences Department:
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- COMP3057: Computer Fundamentals
- COMP3010: Introduction to Computer Programming I
- COMP3110: Introduction to Computer Programming II
- COMP4018: Database Systems
- COMP4036: Programming languages
- COMP4046: Computer Graphics
- COMP5055: Parallel Computer
- (Graduate course) COMP6786: High Performance Computing
- MATE3032: Calculus II

2018-2021	Polytechnic University of Puerto Rico
	• Biomedical Engineering Department: BME1010, BME3010, BME3020, BME3230, BME4220. • Electrical & Computer Engineering and Computer Science Department: CECS2200, CECS2203, CECS3210, EAS8000.
2018-August	Interamerican University at Bayamón, teaching Calculus I, MATH2251.
2018-August	University of Puerto Rico at Humacao. MATE3001, MECU3031 and INGE3016.
2007-2011	University of Puerto Rico at Humacao, Mathematics Department.
	• MATE1007, MATE3005, MATE3008, MATE3171, MATE3172 • MECU3021, MECU3032, COMP3005.
2004-2007	University of Puerto Rico at Mayagüez, Department of Mathematical Sciences.
	• MATE 0066, MATE 3171, MATE 3143 : Instructor.
2003-2004	Universidad Industrial de Santander, Mathematics Department.
	• Calculus I, II, III, Linear Algebra, Superior Algebra: Instructor.
2002	Colegio Psicopedagógico Carl Rogers, Bucaramanga, Santander, Colombia.
	• High school mathematics and computer science teacher.
2001	Colegio Nuestra Señora de la Paz, San Vicente de Chucurí, Santander, Colombia.
	• High school mathematics and physics teacher.

References

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Luis F. Cáceres	University of Puerto Rico at Mayagüez. Department of Mathematical Sciences. Phone: 787-832-4040 Ext. 2647. E-Mail: luis.caceres1@upr.edu
Arturo Portnoy	University of Puerto Rico at Mayagüez. Department of Mathematical Sciences. Phone: 787-832-4040 Ext. 3171. E-Mail: arturo.portnoy1@upr.edu
Marlio Paredes	Universidad del Valle, Colombia. Department of Mathematics. E-Mail: marlio.paredes@correounivalle.edu.co

Mayagüez, PR, November 19, 2024