

Edison Florez Ph.D., M.Sc.

Data Scientist | Business Analyst | Computational Physicist

edisonffh@gmail.com • github.com/e-florez • linkedin.com/in/edisonflorez

Technical Skills: Python • C/C++ • Fortran • Data Base (SQL/NoSQL) • Git • Docker • AWS • Power BI • Tableau • Linux • Bash • OpenMP • HPC • Testing/TDD • CI/CD • \LaTeX

Key Skills: Complex problem solving • Critical thinking • Storytelling • Creativity • Leadership • Teamwork • Project Management • Communication • Time management

Profile: As a data scientist with a profound background in statistics, linear algebra, quantum mechanics, and mathematics, I bring over eight years of experience, having served as a data scientist, business analyst, researcher, developer, and team leader. My passion lies in extracting fundamental insights from data, thinking critically, and understanding the rationale behind each task. With my ability to learn quickly and motivation to take on challenges, I have

excelled as a team player and individual contributor, taking calculated risks and showing initiative. My experience spans consulting for biotech startups and the financial industry, where I develop and validate scalable data pipelines, and work collaboratively to deliver top-quality, data-driven solutions. In my spare time, I enjoy intellectual pursuits like drawing and writing about science fiction. I am a beer and cycling enthusiast, although not all simultaneously.

Professional Experience

• Data Scientist

Aug.2021 - Aug 2023

HelicoBio [helico.bio], New Zealand

COMPUTATIONAL PROTEIN DESIGNER: Leveraging in-depth knowledge of biophysics and protein design, I created and validated scalable pipelines to advance plant biology research. As a DATA SCIENTIST, I collaborated with cross-functional groups to deliver high-quality, data-driven solutions. I contributed to all phases of the software development lifecycle, data extraction, cleaning and analysis, including the development, testing, and deployment of new functionalities using Python and C++. A notable achievement was leading the development of a pipeline, a protein design platform enabling the execution of comprehensive all-atom molecular dynamics simulations, which are instrumental in understanding protein dynamics and function.

• Freelancer Editor

Enago [enago.com], Remote

Since Apr.2023

MDPI [mdpi.com], Remote

Apr.2018 - Dec.2018

COPY & SUBSTANTIVE EDITING: I perform Copy Editing, refining grammar and scientific terminology; and Substantive Editing, enhancing manuscript structure and content, clarifying ambiguous text, and verifying citation relevance. This helps authors aiming for high-impact journals and those requiring extensive language assistance.

- **Teaching/Lab Assistant and Demonstrator** Aug.2018 - Mar.2020
Massey University [massey.ac.nz], New Zealand
PHYSICS: Instruct and advise students in workshops, with an emphasis on intricate topics such as advanced mechanics, thermodynamics, fluid dynamics, magnetic field theory, electromagnetism, and circuit analysis. My role is instrumental in enhancing students' understanding of these complex physical concepts and principles.
- **Data Scientist** Aug.2016 - Mar.2018
EY-ibf [ey.com], Colombia.
SAP-IMPLEMENTATION AND BANK-ANALYZER: Develop tailored solutions based on thorough business and technical analyses, primarily within SAP for Analytical Banking and Business Intelligence. I specialize in crafting complex models and implementing them, addressing economic problems through customized solutions. Additionally, I developed and implemented mathematical models related to financial inquiries, providing detail-oriented and pragmatic solutions.
- **Graduate Teaching Assistant** Sept.2015 - Aug.2016
University of Antioquia [udea.edu.co], Colombia.
QUANTUM & COMPUTATIONAL CHEMISTRY: Guide advanced college students through the intricate domain of Quantum Chemistry. I ensure students achieve proficiency in the quantum language, comprehend relevant methods, and grasp key concepts. Furthermore, I facilitate their understanding of the interpretation and application of these principles in chemically interesting systems.

Open-Source Contributions

- **Parallel Tempering Monte Carlo (PTMC):** This project introduces an advanced Fortran (2003) code that uses the Parallel Tempering Monte Carlo (PTMC) method for an accurate and efficient analysis of phase transitions in atomic and molecular clusters. Code available on github.com/e-florez/PTMC
- **Atomic and Molecular Cluster Energy Surface Sampler (AMCESS):** An open-source Python package that automates the exploration of the Potential Energy Surface (PES) for atomic and molecular clusters. AMCESS uses advanced optimization techniques to generate candidate structures for critical points on the PES, enhancing research accuracy and efficiency. Code available on github.com/e-florez/amcess

Academic Background

- **Doctor of Philosophy** July 2023
Computational Physics, Massey University, New Zealand
- **Master of Science** December 2014
Computational Chemistry, University of Antioquia, Colombia
- **Bachelor of Science** July 2012
Chemistry, University of Antioquia, Colombia

Fellowships and Awards

- **Ph.D. in Physics:** Massey University Doctoral Scholarship

- **M.Sc. in Chemistry:** Honours and research work with meritorious award.

Publications

1. **Flórez, Edison;** Zapata-Escobar, Andy; Ferraro, Franklin; Ibarguen-Becerra, César; Chamorro, Yuly; and Maldonado, Alejandro F. "Coordination of Mercury (II) in Water Promoted over Hydrolysis in Solvated Clusters $[\text{Hg}(\text{H}_2\text{O})_{1-6}]^{2+}_{(aq)}$: Insights from Relativistic Effects and Free Energy Analysis." [Accepted by The Journal of Physical Chemistry A](#)
2. **Flórez, Edison;** Reuvers, Tom; Schwarz, WH Eugen and Peter Schwerdtfeger. "The Stability of the Noble Gas Fluorides from Nonrelativistic and Relativistic Density Functional and Coupled Cluster Studies." [Submitted](#)
3. **Flórez, Edison;** Odile R. Smits; Jan-Michael Mewes; Paul Jerabek; and Peter Schwerdtfeger. "From the gas phase to the solid state: The chemical bonding in the superheavy element flerovium." *The Journal of Chemical Physics* 157, no. 6 (2022): 064304. [DOI: 10.1063/5.0097642](#)
4. Chamorro, Yuly; **Flórez, Edison;** Alejandro F. Maldonado; Gustavo A. Aucar; and Albeiro Restrepo. "Microsolvation of heavy halides." *International Journal of Quantum Chemistry* 121, no. 7 (2021): e26571. [DOI: 10.1002/qua.26571](#)
5. **Flórez, Edison;** Helgaker, Trygve; Klopper, Wim; Teale, Andrew; Stopkiewicz, Stella; and Pahl, Elke. "Melting Under Extreme Conditions: Ab Initio Monte Carlo Simulations." In *APS March Meeting Abstracts*, vol. 2019, pp. C17-001. 2019. [ui.adsabs.harvard.edu/abs/2019APS..MARC17001F](#)
6. **Flórez, Edison;** Alejandro F. Maldonado; Gustavo A. Aucar; Jorge David; and Albeiro Restrepo. "Microsolvation of methylmercury: structures, energies, bonding and NMR constants (^{199}Hg , ^{13}C and ^{17}O)." *Physical Chemistry Chemical Physics* 18, no. 3 (2016): 1537-1550. [DOI: 10.1039/c5cp04826e](#)

Supervisions

- Co-supervisor M.Sc. thesis, computational chemistry
Microsolvation of Heavy Halides $[\text{X}(\text{H}_2\text{O})_{1-6}]^-$ ($\text{X} = \text{Br}, \text{I}, \text{At}$)
University of Antioquia [[udea.edu.co](#)], Colombia.

Apr.2018 - Feb.2020

References available upon request

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Yours sincerely,

Edison Florez

edisonffh@gmail.com

Auckland, New Zealand.

