

GONZALO G. PERAZA MUES

PhD Theoretical Physics, Data Science Professor, Researcher in Complex and Urban Systems

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Merida, Yúc. Méx.



EXPERIENCE

Professor Fellow

Instituto Tecnológico y de Estudios Superiores de Monterrey

Sept. 2023 – Present

Remote

- Fellow at the Center for the Future of Cities
- Data Science Professor at the School of Government and Public Transformation

Coordinator of Networks and Spatial Data

Instituto Tecnológico y de Estudios Superiores de Monterrey

Jan. 2023 – Aug. 2023

Remote

- Implementation of a transport simulator for the city of Monterrey
- Research on urban and complex systems

Postdoctoral Researcher

Instituto Tecnológico y de Estudios Superiores de Monterrey

Oct. 2021 – Dec. 2022

Remote

- Posdoc at the Institute for the Future of Education
- Research on urban and complex systems
- Research on innovation districts and education

Career coordinator for Data Engineering/Associate Professor

Universidad Politécnica de Yucatán

Sept. 2018 – Sept. 2021

Ucú, Yucatán, México

- Curriculum design
- Research of transportation networks and complex systems
- Courses taught in English

Data Science Professor and content creator

DevF

July 2021 – Dec. 2021

Remote

- Online data science professor.
- Course content creation for E-Tech platform with presence in Latin America.

Subject teacher

Universidad Politécnica de Yucatán

Ene. 2017 – Sept. 2018

Ucú, Yucatán, México

- Courses taught (in English): Programming, Probability and Statistics, Differential Calculus, Integral Calculus, Multivariate Calculus, Unsupervised Learning, Statistical Models, Machine Learning

EDUCATION

PhD in Theoretical Physics

Centro de Investigación y Estudios Avanzados del IPN (CINVESTAV)

2012 – 2018

Masters in Applied Physics

Centro de Investigación y Estudios Avanzados del IPN (CINVESTAV)

2010 – 2012

Physics Engineering

Universidad Autónoma de Yucatán (UADY)

2005 – 2010

Graduated with honors

DISTINCTIONS

Member of the National System of Researchers (SNI)
Level I

SKILLS

Programming C

Python Scientific Stack Pandas

Scikit-learn Jupyter

Data Science GIS

Care for detail

Passion for a work well done

Scientific writing in English and Spanish

LANGUAGES

English ● ● ● ● ●

Spanish ● ● ● ● ●

PROJECTS

Urban modeling algorithms for resilient and sustainable planning

Inter-American Development Bank, CSD/HUD Housing & Urban Development

📅 2022-2023

- Development of an interactive dashboard for urban growth in LATAM
- Development of a urban growth simulator for scenario planning up to 2050

Urban Heat Island Assessment for resilient and sustainable planning

Inter-American Development Bank, CSD/HUD Housing & Urban Development

📅 2022-2023

- Development of an interactive dashboard for urban heat island assessment in LATAM
- Evaluation of mitigation strategies for urban heat islands

PUBLICATIONS

📄 Research papers

- Peraza-Mues, Gonzalo, Roberto Ponce-Lopez, Fernando Gómez-Zaldivar, et al. (2023). "Knowledge Based Urban Development: An Approach to Innovation Districts Based on Education". In: *Frontiers in Education* 8, p. 65.
- Peraza-Mues, Gonzalo, Roberto Ponce-Lopez, Juan Antonio Muñoz Sanchez, et al. (2023). "Income Segregation Analysis in Limited-Data Contexts: A Methodology Based on Iterative Proportional Fitting". In: *Geographical Analysis*.
- Pacheco-Martinez, HA et al. (2021). "Precursor nuclei on the bottom of a vibrating container: The onset of granular self-assembly crystallization". In: *Physica A: Statistical Mechanics and its Applications*, p. 126577.
- Moukarzel, Cristian Fernando, Gonzalo Peraza-Mues, and Osvaldo Carvente (2020). "Rotational transport via spontaneous symmetry breaking in vibrated disk packings". In: *Physical Review Letters* 125.2, p. 028001.
- Peraza-Mues, Gonzalo G. and Cristian F. Moukarzel (Oct. 2019). "Sustained rotation in a vibrated disk with asymmetric supports". en. In: *Journal of Statistical Mechanics: Theory and Experiment* 2019.10, p. 103201. ISSN: 1742-5468. DOI: 10.1088/1742-5468/ab417e. URL: <https://doi.org/10.1088/1742-5468/ab417e>.
- Peraza-Mues, G. G., Osvaldo Carvente, and Cristian F. Moukarzel (Sept. 2016). "Rotation in a gravitational billiard". In: *International Journal of Modern Physics C*, p. 1750021. ISSN: 0129-1831. DOI: 10.1142/S0129183117500218. URL: <http://www.worldscientific.com/doi/abs/10.1142/S0129183117500218>.
- Carvente, O. et al. (Feb. 2012). "Self-assembling of non-Brownian magnetized spheres". en. In: *Granular Matter* 14.3, pp. 303-308. ISSN: 1434-5021, 1434-7636. DOI: 10.1007/s10035-012-0333-4. URL: <http://link.springer.com/article/10.1007/s10035-012-0333-4>.

CONFERENCES

REFERENCES

Dr. Osvaldo Carvente Muñoz

@ Universidad Autónoma de Yucatán

✉ osvaldo.carvente@correo.uady.mx

Chief of the Graduate Studies and Research Unit of Facultad de Ingeniería of Universidad Autónoma de Yucatán, Collaborator

Dr. Roberto Ponce López

@ Graduate School of Government and Public Transformation, Instituto Tecnológico y de Estudios Superiores de Monterrey

✉ rpl@trc.mx

Professor-Researcher, Collaborator

Dr. Gerardo Guillermo Cantón

@ CERN / Universidad Politécnica de Yucatán

✉ gerardo.guillermo.canton@cern.ch

Researcher, Collaborator

- “An Implementation of SLEUTH as an Open Platform for Doing Scenario Planning to Predict Urban Growth”. In the *2022 Annual Meeting of the Society for Decision Making Under Deep Uncertainty*
- “Interactive dashboard to characterize urban sprawl in Latin America based on SLEUTH”. In the *Computational Urban Planning and Urban Management 2023*

WORKSHOPS/COURSES GIVEN

Design of Collaborative Solutions to Territorial Problems

Instituto Tecnológico y de Estudios Superiores de Monterrey

📅 Dec. 2022

📍 Remote

- Imparted to Patrimonial and Economic Intelligence Unit (UIPE) of the State of Baja California Sur.
- Data analysis and machine learning.

Strategic Data Analysis

Instituto Tecnológico y de Estudios Superiores de Monterrey

📅 Nov. 2022

📍 Remote

- Imparted to Instituto Nacional Electoral, México.
- Remote and spatial data analysis.

Techniques and Methods for Data Base Management

Instituto Tecnológico y de Estudios Superiores de Monterrey

📅 Oct. 2022

📍 Remote

- Imparted to Patrimonial and Economic Intelligence Unit (UIPE) of the State of Chiapas.
- Data analysis, machine learning, and databases.

Autograding assignments with Jupyter, Nbgrader and GitHub Classroom

Congreso de Innovación en la práctica y enseñanza de las disciplinas científicas, sociales y humanas del Colegio de Bachilleres del Estado de Yucatán

📅 Jan. 2021

📍 Yucatán, México

Forest fire prediction in Yucatán

Reunión Nacional de la Red de Laboratorios de Innovación Intel

📅 November 2019

📍 Yucatán, México

TRAINING

Workshop: IV Summer School on Statistical Physics of Complex and Small Systems

Instituto de Física Interdisciplinar y Sistemas Complejos

📅 2014

📍 Palma de Majorca – Spain

Workshop: Teaching in terms of professional competencies and competency assessment.

Universidad Politécnica de Yucatán

📅 Aug. 2018

📍 Yucatán, México

Workshop in innovation

Haz la Lucha

📅 Oct. 2018

📍 Yucatán, México

Project Management Certification IPMA Level D

International Project Management Association (IPMA)

📅 Aug. 2019