

# CURRICULUM VITÆ

Pedro Henrique González Silva, Ph.D

**Date of birth:** 23/07/1988

**Nationality:** Brazilian

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## Summary

Degree in Mathematics from the Rio de Janeiro State University (2009). Master in Computational Sciences from the Rio de Janeiro State University (2012). PhD in Computer Science from the Fluminense Federal University (2015) and in Informatique from the Université d'Avignon et des Pays de Vaucluse in a joint-supervision scheme (2015). Conducted post-doctoral research at Rio de Janeiro Federal University focusing on Combinatorial Optimization (2015-2016). Associate Professor at the Federal Center for Technological Education of Rio de Janeiro (CEFET/RJ), working in the Department of Computer Science (DEPIN), in the Postgraduate Program in Computer Science (PPCIC) and in the Postgraduate Program in Production and Systems Engineering (PPPRO). Leader of the research group Combinatorial Optimization and Applications (OCA/CNPq). With interest and experience in the areas: Combinatorial Optimization, Metaheuristics, Linear and Integer Programming, Hybrid Methods, Operations Research and Algorithm Design.

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## Education

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| <b>2012</b> | <b>-</b> | <b>2015</b> | PH.D IN COMPUTER SCIENCE<br>Federal Fluminense University (Brazil)<br>Université d'Avignon et des Pays de Vaucluse (France)<br>Advisors: Carlos Martinhon, Luidi Simonetti and Philippe Michelon |
| <b>2010</b> | <b>-</b> | <b>2012</b> | MASTER IN COMPUTER SCIENCE<br>Rio de Janeiro State University (Brazil)<br>Advisors: Rosa Figueiredo and Michael Poss   |
| <b>2006</b> | <b>-</b> | <b>2009</b> | MATHEMATICS<br>Rio de Janeiro State University (Brazil)  |

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## Research Areas

### Domains:

Optimization and Operations Research: Linear Programming, Integer Programming, Metaheuristics and Hybrid Methods.

Machine Learning: Artificial Neural Networks, Bayesian Optimization, Decision Tree, Ensemble Methods, Random Forest.

### Applied:

Optimization of services related to Smart Cities and Industries 4.0:

Communication: Data Mule Routing and Scheduling Problems

Energy: Transmission Expansion Planning Problems

Governance/Logistics: Traffic Count Location Problems

Safety: Safe Set Problem and Hazmat Transportation Problem

Supply Chain: Two Stage Facility Location Problems

Sustainability: Green Vehicle Routing Problems

Transport: Inventory Routing Problems

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## Professional Experience

**2017-present**      ASSOCIATE PROFESSOR – FEDERAL CENTER FOR TECHNOLOGICAL EDUCATION OF RIO DE JANEIRO

Subject	Years	Number of Students	Level	Hours
Graph Optimization	2017-2021	240	Undergraduate	600
Meta-heuristics	2018-2021	60	Undergraduate	360
Meta-heuristics	2018-2021	60	Masters	240
Programming	2017-2021	250	Undergraduate	300
Statistics	2017-2019	39	Undergraduate	120

**2015-2016**      POST-DOCTORAL RESEARCHER – RIO DE JANEIRO FEDERAL UNIVERSITY  
Domain: Combinatorial Optimization  
Supervisor: Nelson Maculan Filho

**2014-2015**      ATTACHÉ TEMPORAIRE D'ENSEIGNEMENT ET DE RECHERCHE (ATER) – UNIVERSITÉ D'AVIGNON ET DES PAYS DE VAUCLUSE

Subject	Level	Hours
Advanced Programming	Undergraduate	24
Algorithms and Optimization	Undergraduate	24
Algorithms and Programming	Undergraduate	30
Boolean Algebra	Undergraduate	37,5
Descriptive Statistics 2	Undergraduate	22,5
Introduction to Optimization	Undergraduate	15
Programming	Undergraduate	18
Programming Project	Undergraduate	20

**2011-2013**      ADJUNCT FACULTY – RIO DE JANEIRO STATE UNIVERSITY

Subject	Year	Number of Students	Level	Hours
Financial Mathematics	1 <sup>st</sup> semester 2013	57	Undergraduate	120
Graph Optimization	2012-2013	60	Undergraduate	120
Linear Programming	2011-2012	63	Undergraduate	120
	2012-2013	58		120
Numerical Methods	2011-2012	97	Undergraduate	240
	2012-2013	104		240
	1 <sup>st</sup> semester 2013	43		120

**2008-2009**      RESEARCH INTERNSHIP – RIO DE JANEIRO STATE UNIVERSITY  
Study and Implementation of Integer Linear Programming Models for Network Design Problems.

<b>2007-2009</b>	TEACHING ASSISTANT – RIO DE JANEIRO STATE UNIVERSITY Calculus and Numerical Methods
<b>2008-2009</b>	VOLUNTEER TEACHER – SANTA ROSA ENTRANCE EXAM PREPARATION Mathematics
<b>2006-2007</b>	RESEARCH INTERNSHIP – RIO DE JANEIRO STATE UNIVERSITY Preconditioners for large linear systems
<b>2006-2006</b>	TEACHING INTERNSHIP – CENTRO EDUCACIONAL DE NITERÓI

## Responsibility and Collective Tasks

Leader of the Combinatorial Optimization and Applications research group.

Member of the program committee of the “LIII Operations Research Brazilian Symposium”.

Member of the program committee of the “LII Operations Research Brazilian Symposium”.

Member of the program committee of the “Workshop on High Performance Computing for Smart Cities”.

Coordinator of the “2018 Seminários da Escola de Informática e Computação”.

Coordinator of the “2018 Workshop da Escola de Informática e Computação”.

Member of the program committee of the “5th International Conference on Variable Neighborhood Search”.

Member of the organizing committee of the “VIII Latin American Workshop on Cliques in Graphs”.

Member of the organization of the “XLIV Operations Research Brazilian Symposium”.

Reviewer for:

- Annals of Operations Research
- Asia-Pacific Journal of Operations Research
- Computers & Industrial Engineering
- Computational & Applied Mathematics
- European Journal of Operational Research
- International Transactions in Operational Research
- Journal of the Operational Research Society
- RAIRO. Recherche Opérationnelle

## Languages

PORTUGUESE (Native)

ENGLISH (C1 - Advanced)

SPANISH (A2 - Elementary)

FRENCH (B2 - Upper Intermediate)

## Certificates

**Examination for the Certificate of Proficiency in English** - 2007 - University of Michigan

## Publications

### Journal Publications

[1] González, Pedro Henrique; Amorim, Glaucio; S Souza, Uéverton; Morais, Igor; dos Santos, Joel; Guimarães, Vanessa de Almeida; Ribeiro, Glaydston Mattos. *Designing screen layout in multimedia applications through*

*integer programming and metaheuristic*. Rairo-Operations Research, 2021. (Accepted for Publication)

- [2] Sousa, Marques Moreira; González, Pedro Henrique; Ochi, Luis Satoru; Martins, Simone de Lima. *A Hybrid Iterated Local Search Heuristic for the Traveling Salesperson Problem with Hotel Selection*. Computers & Operations Research, p. 105-229, 2021.
- [3] Souto, Gabriel; Morais, Igor; Mauri, Geraldo Regis; Ribeiro, Glaydston Mattos; González, Pedro Henrique. *A Hybrid Matheuristic for the Two-Stage Capacitated Facility Location Problem*. Expert Systems With Applications, v. 185, p. 115-501, 2021.
- [4] Marques, Eduardo; Azevedo-Ferreira, Maxwell; González, Pedro Henrique; Guimarães, Vanessa de Almeida. *MAPPING SUPPLY CHAIN STUDIES FROM THE SUSTAINABLE PERSPECTIVE*. Tecnologia & Cultura (CEFET/RJ), v. 37, p. 51, 2021.
- [5] Brito, José André; Lima, Leonardo; González, Pedro Henrique ; Oliveira, Breno; Maculan, Nelson. *Heuristic approach applied to the optimum stratification problem*. Rairo-Operations Research, v. 55, p. 979-996, 2021.
- [6] González, Pedro Henrique; Macambira, Ana Flavia Uzeda; Pinto, Renan Vicente; Simonetti, Luidi; Maculan, Nelson; Michelon, Philippe. *New proposals for modelling and solving the problem of covering solids using spheres of different radii*. Rairo-Operations Research, v. 54, p. 873-882, 2020.
- [7] Guimarães, Vanessa de Almeida; Skroder, Gustav Carl; Ribeiro, Glaydston Mattos; González, Pedro Henrique. *Strategic planning of freight transportation to support smart cities design: The Brazilian soybean case*. Revista Facultad de Ingeniería Universidad de Antioquia, v. 98, p. 104-116, 2020.
- [8] de Abreu, Victor Hugo Souza; González, Pedro Henrique; Mauri, Geraldo Regis; Ribeiro, Glaydston Mattos; Orrico, Romulo Dante; Campos Junior, Nilo Flavio Rosa; Abramides, Carlos Alberto. *Network sensor location problem with monitored lanes: Branch-and-cut and clustering search solution techniques*. Computers & Industrial Engineering, v. 150, p. 106-827, 2020.
- [9] González, Pedro Henrique; Clímaco, Glaubos; Mauri, Geraldo Regis; Vieira, Bruno Salezze; Ribeiro, Glaydston Mattos; Orrico Filho, Romulo Dante; Simonetti, Luidi ; Perim, Leonardo Roberto; Hoffmann, Ivone Catarina Simões. *New approaches for the traffic counting location problem*. Expert Systems With Applications, v. 132, p. 189-198, 2019.
- [10] Macambira, Ana Flavia Uzeda; Simonetti, Luidi; Barbalho, Hugo González, Pedro Henrique; Maculan, Nelson. *A new formulation for the Safe Set problem on graphs*. Computers & Operations Research, v. 111, p. 346-356, 2019.
- [11] Salles, Rebecca; Belloze, Kele; Porto, Fabio; González, Pedro Henrique; Ogasawara, Eduardo. *Nonstationary time series transformation methods: An experimental review*. Knowledge-Based Systems, v. 164, p. 274-291, 2018.
- [12] González, Pedro Henrique; Simonetti, Luidi; Michelon, Philippe; Martinhon, Carlos; Santos, Edcarlos. *A Variable Fixing Heuristic with Local Branching for the Fixed Charge Uncapacitated Network Design Problem with User-optimal Flow*. Computers & Operations Research, v. 76, p. 134-146, 2016.

## Summary Table of Publications

	Journals	Book Chapters	International Conferences	National Conferences
Number of Publications	12	1	23	26

For more detailed information on publications, see: <http://lattes.cnpq.br/5349830056087028>.

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## Supervisions

	Research Interns	Undergrad Students	Master Students
Number of Students	13	10	9

For more detailed information on supervisions, see: <http://lattes.cnpq.br/5349830056087028>.

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## Research Projects

**Hybrid Methods in Combinatorial Optimization** - 2017-present - Coordinator

**Infrastructure Design for Brazilian Road Network - DNIT** - 2019-2021 - Member

**Combinatorial Optimization and Applications** - 2014-2017 - Member