

## Education

2019 – 2023: Philosophiae Doctor (PhD) in Mathematics and Natural Sciences, **University of Bergen (UiB)**, Norway.

*PhD Thesis:* Polyhedra and algorithms for problems bridging notions of connectivity and independence.  
Supervisor: Dag Haugland.

2017 – 2018: Postgraduate Certificate (Specialist Degree) in Pure Mathematics, **Universidade Federal de Minas Gerais (UFMG)**, Brazil.

*Specialization's monograph:* A note on identifying a Hilbert space with its dual using the theorem of Riesz-Fréchet. Academic Advisor: Rémy de Paiva Sanchis.

*Program outline:* real analysis, linear algebra, measure theory and integration, functional analysis, algebraic structures, introduction to probability, asymptotic combinatorics.

2012 – 2014: M.Sc. in Computer Science, **Universidade Federal de Minas Gerais (UFMG)**, Brazil.

*Master's Thesis:* Formulations and exact algorithms for the minimum spanning tree problem with conflicting edges pairs. Supervisor: Sebastián Alberto Urrutia.

*Visiting researcher at the Laboratory for Algorithmics, Hokkaido University (Japan):* one of 3 students recommended by the consulate general of Japan in Rio de Janeiro for the Monbukagakusho/MEXT Scholarship, from September 2013 to April 2014.

2005 – 2011: B.Sc. in Computer Science, **Universidade Federal de Minas Gerais (UFMG)**, Brazil.

*Degree work:* Automatic parallelization of ant colony optimization with MapReduce (in portuguese). Supervisor: Gisele Lobo Pappa.

*Exchange studies:* selection to the international exchange program of the University, spending the academic term of 2009/2010 in the **Hochschule Ulm** (Germany).

## Industry and Enterprise Activities

**University of Bergen (UiB), Norway** – Staff Engineer: data science, high-performance computing, and web-deployment of solutions to support research of the Computational Biology Unit (CBU) in protein structure modelling, biomolecular simulations, and systems medicine.

Since January 2023 (*permanent position*).

**In Optima Consultoria (Brazil)** – CEO: co-founder of the Brazilian business consulting company specialized in optimization and operations research technologies.

From November 2014 to February 2016.

**MAV Tecnologia (Brazil)** – Systems Analyst: development of extensions to a three-tier architecture system for web and email security.

From October 2011 to January 2012.

**Sigma Automated Trading Systems (Brazil)** – Developer: implementation of web page crawling and data extraction tools for automatic information retrieval.

From July 2010 to December 2010.

**Informática Júnior (UFMG, Brazil)** – Volunteer Human Resources Manager at the computer science junior enterprise, being responsible for the company's intranet system project.

From October 2005 to March 2006.

## Teaching Activities

**Molde University College (HiM), Norway** – External sensor: appointment for the examination in the IBE151 (Practical Programming), IBE152 (Introduction to Programming), and IDA720 (Applied Data Analytics) courses. October 2022; March to May 2023.

**University of Bergen (UiB), Norway** – Full course responsible and lecturer in *Combinatorial Optimization*; teaching assistant in *Discrete Structures* and *Linear Optimization* courses. From January 2019 to August 2021.

Federal Center for Technological Education (CEFET-MG, Brazil) – Assistant Professor: undergraduate courses on “Numerical Analysis” and “Algorithms and Data Structures I and II”. From March 2015 to January 2016.

Catholic University of Minas Gerais (PUC-Minas, Brazil) – Assistant Professor: undergraduate courses on “Linear Optimization”, “Graph Theory”, and “Algorithms and Data Structures I and II”. From August 2014 to July 2015.

Operations Research Laboratory (UFMG, Brazil) – Teacher Assistant: “Numerical Analysis” undergraduate course, as a requirement for M.Sc. candidates who are awarded a CAPES/REUNI scholarship. From March 2012 to February 2014.

Undergraduate Teaching Assistant Program (UFMG, Brazil) – Teacher Assistant in *Algorithms and Data Structures III*, *Computer Organization I*, and *Computer Programming* classes. From August 2007 to December 2010.

## Professional Research Activities

**Molde University College (HiM), Norway** – Assistant Professor: research on combinatorial optimization problems arising in maritime logistics (Norwegian Research Council project 227084/O70: Port-Ship Coordinated Planning). From November 2015 to April 2016.

Scientific Computing and Numerical Analysis Laboratory (UFAL, Brazil) – Associate Researcher: developments on algorithms and MIP formulations for energy disaggregation and pricing problems. From April 2014 to December 2015.

Operations Research Laboratory (UFMG, Brazil) – Research Assistant: design and implementation of Magical, a multicore library of algorithms from graph theory. From January 2011 to February 2012.

Programming Languages Laboratory (UFMG, Brazil) – Research Assistant: design and implementation of the prototype of an integrated development environment for multiple compilers. From July 2008 to December 2008.

Deep Computing Visualization Center (UFMG, Brazil) – Research Assistant: evaluation of data mining techniques for the identification and classification of structural signatures of proteins. From January 2007 to October 2007.

## Publications

### *Journal Papers*

“On a class of strong valid inequalities for the connected matching polytope”, under review for publication in *Combinatorica*; also available at arXiv.2309.14019.

“Polyhedral approach to weighted connected matchings in general graphs”, under review for publication in *Discrete Applied Mathematics*; also available at arXiv:2310.05733.

“Polyhedral results and stronger Lagrangean bounds for stable spanning trees”, *Optimization Letters*, 2023, Volume 17, Issue 6, pp 1317-1335 (open access). DOI: 10.1007/s11590-022-01949-8.

“Fixed cardinality stable sets”, *Discrete Applied Mathematics*, 2021, Volume 303, pp 137-148 (open access), DOI: 10.1016/j.dam.2021.01.019

“The matching relaxation for a class of generalized set partitioning problems”, *Discrete Applied Mathematics*, 2019, Volume 253, pp 153 - 166, DOI: 10.1016/j.dam.2018.05.033. Also available at arXiv:1606.09279.

“An effective decomposition approach and heuristics to generate spanning trees with a small number of branch vertices”, *Computational Optimization and Applications*, 2016, Volume 65, Issue 3, pp 821 - 844, DOI: 10.1007/s10589-016-9850-0. Also available at arXiv:1509.06562.

“A branch and cut algorithm for minimum spanning trees under conflict constraints”, *Optimization Letters*, 2015, Volume 9, Issue 1, pp 41 - 55, DOI: 10.1007/s11590-014-0750-x. Also available at arXiv:1307.1424.

### International Conferences

“Towards stronger Lagrangean bounds for stable spanning trees”, *10th International Network Optimization Conference (INOC)*, Aachen, Germany, 2022. Published in a volume of OpenProceedings (open access). DOI: 10.48786/inoc.2022.06.

“The unsuitable neighbourhood inequality for the fixed cardinality stable set polytope”, *18th Cologne–Twente Workshop (CTW)*, online, 2020. Chapter published in Volume 5 of the AIRO Springer Series. DOI: 10.1007/978-3-030-63072-0\_9.

“Combinatorial relaxation bounds and preprocessing for berth allocation problems”, *14th Cologne–Twente Workshop (CTW)*, Gargnano, Italy, 2016. Published in *Electronic Notes in Discrete Mathematics*, 2016, Volume 55, pp 85 - 88, DOI: 10.1016/j.endm.2016.10.022.

“Designing a multicore graph library”, *10th IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA)*, Madrid, Spain, 2012.

“Map ants, Reduce work”, *IX Metaheuristics International Conference (MIC)*, Udine, Italy, 2011.

### Brazilian Conferences

“Uma metodologia de relaxação combinatória para um problema de logística em portos”, *XLVIII Brazilian Symposium on Operations Research (SBPO)*, Vitória, 2016.

“Um algoritmo de branch and cut para árvores geradoras mínimas sob restrições de conflito”, *XLV Brazilian Symposium on Operations Research (SBPO)*, Natal, Brazil, 2013.

“Projeto de uma Biblioteca Paralela de Grafos”, *XVI Latin–Ibero–American Congress on Operations Research / XLIV Brazilian Symposium on Operations Research (CLAIO/SBPO)*, Rio de Janeiro, Brazil, 2012.

“Mining Structural Signatures of Proteins”, *III Workshop on Data Mining Algorithms and Applications*, João Pessoa, Brazil, 2007.

### Poster Presentations

“Formulations and branch and cut algorithm for spanning trees under disjunctive constraints”, *16th Conference on Integer Programming and Combinatorial Optimization (IPCO)*, Valparaíso, Chile, 2013.

## Language Proficiency

Portuguese: native language

English: full professional proficiency in writing, reading and speaking.

*ETS TOEFL Internet-based Test*: total score of 110 in 120. Test taken in December 2015.

Spanish: good in reading, intermediate writing and speaking.

Norwegian: intermediate reading, writing and speaking.

German: intermediate reading, beginner in writing and speaking.

Japanese: intermediate speaking, beginner in writing and reading.

*Japanese-Language Proficiency Test – level 3*: low intermediate in a four-level test series administered by the Japan Foundation and Association of International Education, Japan, 2007.

## Conferences and Workshops Attended

*10th International Network Optimization Conference (INOC)*, Aachen, Germany, 2022.

Served as session chairperson.

*34th Conference of the European Chapter on Combinatorial Optimization (ECCO)*, online, 2021.

Awarded a fee waiver; served as session chairperson.

*18th Cologne–Twente Workshop on Graphs & Combinatorial Optimization (CTW)*, online, 2020.

*14th Cologne–Twente Workshop on Graphs & Combinatorial Optimization (CTW)*, Gargnano, Italy, 2016.

*16th Conference on Integer Programming and Combinatorial Optimization (IPCO)*, Valparaíso, Chile, 2013.

Awarded a stipend to attend the conference and the following *VI IPCO Summer School / VIII Escuela de Verano en Matemáticas Discretas*.

*XLV Brazilian Symposium on Operations Research (SBPO)*, Natal, Brazil, 2013.

*XVI Latin–Ibero–American Congress on Operations Research / XLIV Brazilian Symposium on Operations Research (CLAIO/SBPO)*, Rio de Janeiro, Brazil, 2012.

*IX Metaheuristics International Conference (MIC)*, Udine, Italy, 2011.

*Massively Parallel Programming Week*, within the Summer School of the Scientific Computing National Laboratory (LNCC), Petrópolis, Brazil, 2011.

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