Luiz-Rafael Santos

(November 25, 2026)

Departament of Mathematics

Universidade Federal de Santa Catarina (UFSC)

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1 Main research interests

- Continuous optimization
- Convex optimization
- Mathematical programming
- Operational research
- Machine Learning algorithms
- Power generation models
- Numerical Linear Algebra
- Applications of Fuzzy sets

2 Education

2009–2014 **Ph.D. in Applied Mathematics**
Universidade Estadual de Campinas, Campinas, SP, Brazil

Awarded on: 31st July 2014
Supervisor: Prof. Aurelio Ribeiro Leite de Oliveira
Ph.D. visiting student (in 2012) under the supervision of Prof. Jacek Gondzio at University of Edinburgh, Edinburgh, Scotland, UK

2005–2008 **M.Sc. in Applied Mathematics (Biomathematics)**
Universidade Estadual de Campinas, Campinas, SP, Brazil

Awarded on: 2nd September 2008
Supervisor: Prof. Rodney Bassanezi

1999–2004 **B.Sc. in Mathematics**
Universidade Regional de Blumenau, Blumenau, SC, Brazil

Awarded on: February 2004
Supervisor: Prof. Claudio Loesch

3 Positions and Academic visits

01/2026–12/2027 **Vice-President**, Brazilian Society for Applied and Computational Mathematics (SBMAC), Brazil.

09/2025–now **Associate Professor**, Departamento de Matemática, Universidade Federal de Santa Catarina, Campus Blumenau, SC, Brazil.

07/2026 **Visiting Researcher**, Graduate School of Informatics, Kyoto University, Kyoto, Japan. (hosted by Prof. Ellen Hidemi Fukuda)

09/2014–08/2025 **Assistant Professor (tenured)**, Departamento de Matemática, Universidade Federal de Santa Catarina, Campus Blumenau, SC, Brazil.

10/2024 **Visiting Researcher**, Institute for Information and Communication Technologies, Electronics and Applied Mathematics (ICTEAM), UC Louvain, Louvain-la-nueve, Belgium. (hosted by Prof. Geovani Grapiglia)

08/2023–01/2024 **Visiting Professor**, Departamento de Matemática Aplicada, Instituto de Matemática, Estatística e Computação Científica, Universidade Estadual de Campinas, Campinas, SP, Brazil. (hosted by Prof. Jose Mário Martinez)

04/2023 **Visiting Researcher**, Department of Mathematical Sciences, Northern Illinois University, DeKalb, IL, USA. (hosted by Prof. Yunier Bello-Cruz)

01/2023–07/2023 **Visiting Professor**, Management Sciences & Engineering, Stanford University, Stanford, CA, USA. (hosted by Prof. Madeleine Udell)

12/2012–09/2014 **Assistant Professor (tenure track)**, Instituto Federal Catarinense, Balneário Camboriú, SC, Brazil.

02/2012–06/2012 **Visiting Ph.D. Scholar**, School of Mathematics, University of Edinburgh, Edinburgh, UK. (hosted by Prof. Jacek Gondzio.)

03/2005–12/2012 **Graduate Researcher (M.Sc. and Ph.D.)/Teaching assistant**, Universidade Estadual de Campinas, Campinas, SP, Brazil.

04/2000–01/2009 **Administrative staff/IT technician**, Universidade Regional de Blumenau, Blumenau, SC, Brazil.

4 Research summary

Papers published in peer reviewed journals	21
Total citations, according to Google Scholar	405
h-index	12
i10-index	14
Supervisions of undergrad reports	20
Supervision of M.Sc. students	6
Supervision of Ph.D. students	3

5 Selected peer-reviews and conference services

2026: **Chair of the national organizing committee:** *Brazilian Conference on Applied and Computational Mathematics* (CNMAC) – Sociedade Brasileira de Matemática Aplicada e Computacional (SBMAC), Brazil.

2026: **Co-Chair of the organizing committee:** *BRAZOPT 2026 – Brazilian Workshop on Continous Optimization* – Universidade Federal de Santa Catarina, Blumenau, SC, Brazil.

2025: **Chair of the national organizing committee:** *Brazilian Conference on Applied and Computational Mathematics* (CNMAC) – Sociedade Brasileira de Matemática Aplicada e Computacional (SBMAC), Brazil.

2025-now **Associate Editor:** *Trends in Computational and Applied Mathematics* (ISSN 2676-0029).

2024-now **Editor:** *Notas de Matemática Aplicada*, Sociedade Brasileira de Matemática Aplicada e Computacional (SBMAC), Brazil.

2020-now **Associate editor:** *Proceeding Series of the Brazilian Society of Computational And Applied Mathematics*. (ISSN 2359-0793).

2014-now: **Reviewer services:** Numerical Algorithms; Pesquisa Operacional (online); Computational And Applied Mathematics; Tendências em Matemática Aplicada e Computacional; Rairo-Operations Research; Optimization Letters; Computational Optimization and Applications; Journal of Optimization Theory and Applications; European Journal of Operations Research, Mathematics of Computation.

2024: **Committee president** for selecting the Best 2023-2024 Master of Science dissertation in Applied and Computational Mathematics (Clovis Caesar Gonzaga award) – Sociedade Brasileira de Matemática Aplicada e Computacional, Brazil.

2023: **Committee president** dor selecting the Best 2022-2023 undergraduate monography in Applied and Computational Mathematics (Beatriz Neves scientific initiation award) – Sociedade Brasileira de Matemática Aplicada e Computacional, Brazil.

2019-2024 **Member of the national organizing committee** from 2019, 2021, 2022, 2023 and 2024 editions of *Brazilian Conference on Applied and Computational Mathematics* (CNMAC) – Sociedade Brasileira de Matemática Aplicada e Computacional (SBMAC), Brazil.

2021: **Committee member** of the Best 2019-2021 Master of Science dissertation in Applied and Computational Mathematics (Odelar Linhares award) – Sociedade Brasileira de Matemática Aplicada e Computacional, Brazil.

2018: **Co-Chair** of the "*Regional Meeting in Applied and Computational Mathematics (ERMAC)*", UFSC/Sociedade Brasileira de Matemática Aplicada e Computacional (SBMAC), Blumenau, SC, Brazil.

2017: **Organizer** of the "*Continuous Optimization*" session on the 31st Brazilian Colloquium of Mathematics – Sociedade Brasileira de Matemática (SBM), Brazil.

6 Grants, endowments, scholarships, and honors

2026: (R$ 20.000.00) **CNMAC 2026**. – CNPq, Brazil.

2026: (R$ 20,300.00) **BRAZOPT 2026**. – CAPES, Brazil.

2025: (R$ 50,000.00) **BRAZOPT 2026**. – FAPESC, Brazil.

2025: (R$ 17,000.00) **CNMAC 2025**. – CNPq, Brazil.

2025: (R$ 15,000.00) **Travel support to participate at the Spring School and Workshop on Variational Analysis and Optimization 2025, Hanoi, Vietnam**. – CNPq, Brazil.

2024: (€ 1,200.00) **Visiting lecturer travel support** – UC Louvain, Louvain-la-Nueve, Belgium.

2024: (R$ 20,000.00) **Travel support for visiting UC Louvain, Louvain-la-Nueve, Belgium**. – CAPES-PRINT, Brazil.

2024: (R$ 1,700.00) **Travel support to participate at the Congersso Nacional de Matemática Aplicada e Computacional (CNMAC2024), Porto de Galinhas, PE, Brazil**. – UFSC and INCTMat/SBMAC, Brazil.

2024: (R$ 9,000.00) **Travel support to participate at the International Symposium on Mathematical Programming (ISMP2024), Montréal, Canada**. – UFSC and CNPq, Brazil.

2024–2028: (R$ 115,200.00) **CNPq Research Fellow – Level 1D** (Grant 310571/2023-5), CNPq, Brazil;

2023–2024: (R$ 85,000.00) **FAPESP Visiting Researcher Award** (Grant 2023/03969-4), FAPESP, Brazil;

2023: (US$ 1,100.00) **Visiting Scholar travel support** – Stanford University, CA, USA.

2023: (US$ 750.00) **Visiting lecturer travel support** – Northern Illinois University, IL, USA.

2023: **Class honoree, honored by the Mathematics class of 2023** – UFSC Blumenau, Brazil.

2022: **Class honoree and commencement speaker, honored by the Mathematics class of 2022** – UFSC Blumenau, Brazil.

2022: (R$ 12.600,00) **CNPq scientific and knownledge difusion fellow – Level C** (Grants 102970/2022-0 and 113190/2022-0) – CNPq, Brazil.

2019: **Class honoree, honored by the Mathematics class of 2019** – UFSC Blumenau, Brazil.

2018: (R$ 5,000.00) **Open arms – travel support for young Mathematicians to participate at the International Conference on Mathematics, Rio de Janeiro, RJ, Brazil** – International Mathematical Union and SBM, Brazil.

2018: (R$ 2,000.00) **Travel support to participate at the International Symposium on Mathematical Programming (ISMP2016), Bordeaux, France.** – UFSC, Brazil.

2015: (US$ 3,000.00) **Travel support to participate at the International Symposium on Mathematical Programming (ISMP2015), Pittsburgh, PA, US.** – PAEX-CAPES, Brazil.

2012: (R$ 2,500.00) **Travel support to participate at ELAVIO Summer School, Bento Gonçalves, Brazil** – SOBRAPO/ALIO/INFORMS, Brazil.

2009–2012: (R$ 120,000.00) **Ph.D. Scholarship** (Grant 2008/09685-8) – FAPESP, Brazil;

2005–2007: (R$ 20,700.00) **M.Sc. Scholarship** – CAPES, Brazil.

7 Publications

Preprints and ongoign work

[1] M. E. Pinheiro, J. V. Pamplona, V. C. Blau, D. S. Gonçalves, **L.-R. Santos**, and H. Lara-Urdaneta. *Synthetic Population Generation and Georeferenced Household Allocation Via Iterative Proportional Fitting and Integer Programming*. Aug. 23, 2026. Optimization Online: 36327. URL: https://optimization-online.org/?p=36327 (visited on 09/07/2026). preprint.

[2] R. Behling, Y. Bello-Cruz, A. Iusem, D. Liu, and **L.-R. Santos**. *On Circumcentered Direct Methods for Monotone Variational Inequality Problems*. Feb. 8, 2026. DOI: 10.48550/arXiv.2506.17814. arXiv: 2506.17814 [math]. URL: http://arxiv.org/abs/2506.17814 (visited on 02/11/2026). preprint.

[3] R. Behling, Y. Bello-Cruz, **L.-R. Santos**, and P. J. S. Silva. *Basis Pursuit by Inconsistent Alternating Projections*. Aug. 20, 2025. DOI: 10.48550/arXiv.2508.15026. arXiv: 2508.15026 [math]. URL: http://arxiv.org/abs/2508.15026 (visited on 10/08/2025). preprint.

[4] P. Barros, R. Behling, V. Guigues, and **L.-R. Santos**. *Parallelizing the Circumcentered-Reflection Method*. In Progress. May 2025. DOI: 10.48550/arXiv.2505.17258. arXiv: 2505.17258 [math]. preprint.

[5] F. R. Villas-Bôas, **L.-R. Santos**, and A. R. L. Oliveira. "An Interior Point Method with No Centrality Parameter". In Progress. 2024.

Peer reviewed academic papers

[1] P. Barros, V. Guigues, R. Behling, and **L.-R. Santos**. "New Operator Designs for Halpern Iterations with Explicit Rates under Hölder Error Bounds". In: *Mathematics of Computation* (Sept. 18, 2026). DOI: 10.1090/mcom/4267. arXiv: 2601.14451 [math.OC]. online.

[2] Y.-C. Chu, **L.-R. Santos**, and M. Udell. "Randomized Nyström Preconditioned Interior Point-Proximal Method of Multipliers". In: *SIAM Journal on Scientific Computing* 48.1 (Feb. 28, 2026), A132–A159. DOI: 10.1137/24M1654968. arXiv: 2404.14524 [math].

[3] R. Behling, Y. Bello-Cruz, A. N. Iusem, A. A. Ribeiro, and **L.-R. Santos**. "Fejér* Monotonicity in Optimization Algorithms". In: *Optimization* 75.15 (2026), pp. 4159–4174. DOI: 10.1080/02331934.2026.2673439. arXiv: 2410.08331.

[4] J. V. Pamplona, M. E. Pinheiro, and **L.-R. Santos**. "Constructing Magic Squares: An Integer Linear Programming Model and a Fast Approach". In: *Computational and Applied Mathematics* 45.332 (2026). DOI: 10.1007/s40314-026-03731-3. arXiv: 2504.20017 [math].

[5] R. Behling, Y. Bello-Cruz, A. Iusem, D. Liu, and **L.-R. Santos**. "A Finitely Convergent Circumcenter Method for the Convex Feasibility Problem". In: *SIAM Journal on Optimization* 34.3 (Sept. 2024), pp. 2535–2556. DOI: 10.1137/23M1595412. eprint: 2308.09849 (math).

[6] R. Behling, Y. Bello-Cruz, A. Iusem, D. Liu, and **L.-R. Santos**. "A Successive Centralized Circumcenter Reflection Method for the Convex Feasibility Problem". In: *Computational Optimization and Applications* 87.1 (2024), pp. 83–116. DOI: 10.1007/s10589-023-00516-w. arXiv: 2212.06911 [math].

[7] R. Behling, Y. Bello-Cruz, A. N. Iusem, and **L.-R. Santos**. "On the Centralization of the Circumcentered-Reflection Method". In: *Mathematical Programming* 205 (2024), pp. 337–371. DOI: 10.1007/s10107-023-01978-w. arXiv: 2111.07022.

[8] R. Filippozzi, D. S. Gonçalves, and **L.-R. Santos**. "First-Order Methods for the Convex Hull Membership Problem". In: *European Journal of Operational Research* 306.1 (Apr. 1, 2023), pp. 17–33. DOI: 10.1016/j.ejor.2022.08.040. arXiv: 2111.07720.

[9] R. Arefidamghani, R. Behling, A. N. Iusem, and **L.-R. Santos**. "A Circumcentered-Reflection Method for Finding Common Fixed Points of Firmly Nonexpansive Operators". In: *Journal of Applied and Numerical Optimization* 5.3 (2023), pp. 299–320. DOI: 10.23952/jano.5.2023.3.02. arXiv: 2203.02410.

[10] R. Behling, Y. Bello-Cruz, H. Lara-Urdaneta, H. Oviedo, and **L.-R. Santos**. "Circumcentric Directions of Cones". In: *Optimization Letters* 17 (2023), pp. 1069–1081. DOI: 10.1007/s11590-022-01923-4. arXiv: 2112.08314.

[11] G. H. M. Araújo, R. Arefidamghani, R. Behling, Y. Bello-Cruz, A. Iusem, and **L.-R. Santos**. "Circumcentering Approximate Reflections for Solving the Convex Feasibility Problem". In: *Fixed Point Theory and Algorithms for Sciences and Engineering* 2022.1 (Jan. 4, 2022), p. 30. DOI: 10.1186/s13663-021-00711-6. arXiv: 2105.00497.

[12] R. Arefidamghani, R. Behling, Y. Bello-Cruz, A. N. Iusem, and **L.-R. Santos**. "The Circumcentered-Reflection Method Achieves Better Rates than Alternating Projections". In: *Computational Optimization and Applications* 79.2 (2021), pp. 507–530. DOI: 10.1007/s10589-021-00275-6. arXiv: 2007.14466.

[13] R. Behling, Y. Bello-Cruz, and **L.-R. Santos**. "Infeasibility and Error Bound Imply Finite Convergence of Alternating Projections". In: *SIAM Journal on Optimization* 31.4 (2021), pp. 2863–2892. DOI: 10.1137/20M1358669. arXiv: 2008.03354.

[14] R. Behling, Y. Bello-Cruz, and **L.-R. Santos**. "On the Circumcentered-Reflection Method for the Convex Feasibility Problem". In: *Numerical Algorithms* 86 (2021), pp. 1475–1494. DOI: 10.1007/s11075-020-00941-6. arXiv: 2001.01773.

[15] R. Behling, Y. Bello-Cruz, and **L.-R. Santos**. "The Block-Wise Circumcentered–Reflection Method". In: *Computational Optimization and Applications* 76.3 (July 2020), pp. 675–699. DOI: 10.1007/s10589-019-00155-0. arXiv: 1902.10866.

[16] L. F. Bueno, G. Haeser, and **L.-R. Santos**. "Towards an Efficient Augmented Lagrangian Method for Convex Quadratic Programming". In: *Computational Optimization and Applications* 76.3 (July 2020), pp. 767–800. DOI: 10.1007/s10589-019-00161-2.

[17] **L.-R. Santos**, F. R. Villas-Bôas, A. R. L. Oliveira, and C. Perin. "Optimized Choice of Parameters in Interior-Point Methods for Linear Programming". In: *Computational Optimization and Applications* 73.2 (June 2019), pp. 535–574. DOI: 10.1007/s10589-019-00079-9.

[18] R. Behling, Y. Bello-Cruz, and **L.-R. Santos**. "Circumcentering the Douglas–Rachford Method". In: *Numerical Algorithms* 78.3 (July 1, 2018), pp. 759–776. DOI: 10.1007/s11075-017-0399-5. arXiv: 1704.06737.

[19] R. Behling, Y. Bello-Cruz, and **L.-R. Santos**. "On the Linear Convergence of the Circumcentered-Reflection Method". In: *Operations Research Letters* 46.2 (Mar. 2018), pp. 159–162. DOI: 10.1016/j.orl.2017.11.018. arXiv: 1711.08651.

[20] A. S. Siqueira, R. C. da Silva, and **L.-R. Santos**. "Perprof-Py: A Python Package for Performance Profile of Mathematical Optimization Software". In: *Journal of Open Research Software* 4.e12 (Apr. 2016), p. 5. DOI: 10.5334/jors.81.

[21] **L.-R. Santos** and R. C. Bassanezi. "Sistemas P-fuzzy Unidimiensionais Com Condição Ambiental". In: *Biomatemática* 19.1 (2009), pp. 11–24.

Proceedings and book chapters

[1] M. B. Lobe and **L.-R. Santos**. "Fundamentos Matemáticos para Regressão Logística em Classificação Binária". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. XLIV Congresso Nacional de Matemática Aplicada e Computacional (Fundação Getúlio Vargas). Vol. 12. 1. Rio de Janeiro, Feb. 13, 2026, pp. 1–2.

[2] L. A. Sasse and **L.-R. Santos**. "Introdução à Análise Convexa". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. XLIV Congresso Nacional de Matemática Aplicada e Computacional (Fundação Getúlio Vargas). Vol. 12. 1. Rio de Janeiro, BR, Feb. 13, 2026, pp. 1–2.

[3] P. A. Testoni Jr and **L.-R. Santos**. "Métodos de Reflexão Circuncentrada com aleatoriedade". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. XLIV Congresso Nacional de Matemática Aplicada e Computacional (Fundação Getúlio Vargas). Vol. 12. 1. Rio de Janeiro, BR, Feb. 13, 2026, pp. 1–2.

[4] R. Filippozzi, D. S. Gonçalves, and **L.-R. Santos**. "Accelerating the Spherical Triangle Algorithm for the Convex-Hull Membership Problem". In: 2023 SIAM Conference on Optimization (OP23). Seattle, WA, 2023, p. 4.

[5] R. Filippozzi, D. S. Gonçalves, and **L.-R. Santos**. "First-order methods for the convex-hull membership problem and applications". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. Congresso Brasileiro de Matemática Aplicada e Computcional. Vol. 9. 1 1. Campinas, SP: SBMAC, Dec. 8, 2022.

[6] P. C. R. Ertel and **L.-R. Santos**. "Otimização e análise teórica das máquinas de vetores suporte aplicadas à classificação de dados". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. Congresso Nacional de Matemática Aplicada e Computacional. Vol. 8. 1. Campo Grande, MS: SBMAC, Dec. 20, 2021.

[7] T. da Silva and **L.-R. Santos**. "Métodos iterativos para solução de sistemas lineares: aceleração usando reflexões circuncentradas". In: *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*. Congresso Nacional de Matemática Aplicada e Computacional. Vol. 8. 1. Campo Grande, MS: SBMAC, Dec. 20, 2021.

[8] F. L. Loução Jr., M. S. Mathias, C. Sagastizábal, **L.-R. Santos**, and F. N. C. Sobral. "Hydro-Reservoir Management and Unit-Commitment in Energy Optimization". In: *Mathematics in Industry Reports*. VI Brazilian Study Group with Industry. São Carlos, SP: Cambridge Open Engage, Oct. 1, 2021. DOI: 10.33774/miir-2021-6qw7r.

[9] F. R. Villas-Bôas, A. R. L. Oliveira, C. Perin, and **L.-R. Santos**. "Polynomial Inequality Systems in Neighborhoods of the Central Path". In: *Proceedings of the 3rd IMA Conference on Numerical Linear Algebra and Optimisation*. Birminghan, UK, 2012, p. 26.

[10] **L.-R. Santos**, F. R. Villas-Bôas, A. R. L. Oliveira, and C. Perin. "On a Polynomial Merit Function for Interior Point Methods". In: *Proceedings of the 19th Triennial Conference of the International Federation of Operational Research Societies*. Melbourne, AUS, 2011, p. 121.

Dissertations

[1] **L.-R. Santos**. "Optimized Choice of Parameters in Interior-Point Methods for Linear Programming". PhD's thesis (in portuguese). Campinas: IMECC/Unicamp, July 2014. DOI: 10.47749/T/UNICAMP.2014.931062.

[2] **L.-R. Santos**. "Strategies for pests control: p-fuzzy systems and hybrid control". Master's thesis (in portuguese). Campinas: IMECC/Unicamp, Sept. 2008. DOI: 10.47749/T/UNICAMP.2008.434021.

[3] **L.-R. Santos**. "Reconhecimento de faces utilizando pré-processamento através da transformada log-radon". Graduate dissertation (in portuguese). Blumenau: Universidade Regional de Blumenau, 2004. 41 pp.

8 Talks and Presentations

[1] *O professor de Matemática na visão das sociedades [The Mathematics Teacher from the Perspective of Mathematical Societies]*. São Luís, MA, Brazil, Nov. 19–22, 2026. 9º Simpósio Nacional da Formação do Professor de Matemática (9th National Symposium on Mathematics Teacher Education), promoted by ANPMat and UFMA, co-organized with the Brazilian Ministry of Education, in partnership with IMPA and supported by SBM (invited round table speaker, in Portuguese).

[2] *On circumcentered direct methods for monotone variational inequality problems*. Taipei, Taiwan, July 27–29, 2026. International Conference on Optimization and Machine Learning (ICOML 2026), National Taiwan Normal University (NTNU) (keynote talk).

[3] *Circumcenters tools for the Convex Feasibility Problem: theory and applications in accelerating projection-based algorithms*. Kyoto, Japan, July 22, 2026. System Optimization Laboratory Seminar, Graduate School of Informatics, Kyoto University (invited seminar talk).

[4] *Constructing Magic Squares: An Integer Constraint Satisfaction Problem and a Fast Approach*. Tokyo, Japan, July 13–17, 2026. Eighth Conference on Discrete Optimization and Machine Learning (DOML 2026), Institute of Science Tokyo (keynote talk).

[5] *Circumcenters tools for the Convex Feasibility Problem: theory and applications in accelerating projection-based algorithms*. Southampton, UK, June 8, 2026. CORMSIS Seminar, School of Mathematical Sciences, University of Southampton (invited seminar talk).

[6] *Randomized Nyström Preconditioned Interior Point-Proximal Method of Multipliers*. Edinburgh, UK, June 3–5, 2026. SIAM Conference on Optimization (OP26), Session MS127 – Iterative Linear Algebra Techniques in Optimization (contributed talk).

[7] *Randomized Nyström Preconditioned Interior Point-Proximal Method of Multipliers*. Edinburgh, UK, May 27–29, 2026. Preconditioning Techniques for Scientific and Industrial Applications, ICMS, Bayes Centre (invited talk).

[8] *On circumcentered direct methods for monotone variational inequality problems*. Arica, Chile, May 11–15, 2026. International Conference on Optimization and Machine Learning: Theory and Applications (ICOMaLTA-2026), Universidad de Tarapacá (semi-plenary talk).

[9] *Randomized Nyström Preconditioned Interior Point-Proximal Method of Multipliers*. Florianópolis, SC, Brazil, Mar. 2–4, 2026. III Encontro Regional de Matemática Aplicada e Computacional de Santa Catarina (ERMAC-SC 2026), UFSC (contributed talk).

[10] *Histórico da licenciatura, sua evolução e impactos na formação docente*. Camboriú, SC, Brazil, Oct. 14, 2025. VII Semana Acadêmica da Licenciatura em Matemática (VII SAMAT), Instituto Federal Catarinense, Campus Camboriú (round table, in Portuguese).

[11] *Basis pursuit por projeções alternadas inconsistentes*. Goiânia, GO, Brazil, Oct. 6–10, 2025. XXXI Semana do IME e VIII Seminário de Pesquisa e Pós-Graduação do IME/UFG, UFG (plenary talk, in Portuguese).

[12] *Fejér monotonicity in optimization algorithms*. Miami, FL, USA, July 21–25, 2025. Mathematical Congress of the Americas (MCA) 2025, Special Session 58 – Recent Advances in Convex and Riemannian Optimization, University of Miami (invited talk).

[13] *Circumcenters tools for the Convex Feasibility Problem: theory and applications in accelerating projection-based algorithms*. Porto Alegre, RS, Brazil, July 2–4, 2025. XII Encontro de Matemática Aplicada e Computacional do Rio Grande do Sul (ERMAC-RS 2025), IME/UFRGS (plenary talk).

[14] *Randomizing Block-wise Circumcenter-Based Methods for Solving Linear Systems*. Rio de Janeiro, RJ, Brazil, May 6, 2025. First Cariopt: Carioca Workshop on Optimization and Applications, FGV (invited talk).

[15] *Circumcenters Tools for the Convex Feasibility Problem: Theory and Applications*. Hanoi, Vietnam, Mar. 10–15, 2025. Spring School and Workshop on Variational Analysis and Optimization 2025, Vietnam Institute for Advanced Study in Mathematics (VIASM) (invited talk).

[16] *Circumcenters tools for the Convex Feasibility Problem: theory and applications in accelerating projection-based algorithms*. Maringá, PR, Brazil, Jan. 13–Feb. 28, 2025. 25º Programa de Verão em Matemática, UEM (plenary talk).

[17] *Solving large-scale basis pursuit by infeasible alternating projections*. Montréal, Canada, July 22–26, 2024. 25th International Symposium on Mathematical Programming (ISMP 2024), Session MB92 – Nonsmooth Optimization (contributed talk).

[18] *Basis pursuit by infeasible alternating projections*. Rio de Janeiro, RJ, Brazil, Mar. 8–12, 2024. XIV Brazilian Workshop on Continuous Optimization (BRAZOPT), FGV (contributed talk).

[19] *Randomized preconditioners for linear systems arising from interior point methods*. Maringá, PR, Brazil, Feb. 26–28, 2024. IV Summer School PMA-UEM, UEM (keynote talk).

[20] *Tutorial de Julia para Otimização e Pesquisa Operacional*. São José dos Campos, SP, Brazil, Feb. 1–2, 2024. Programa de Verão de Pesquisa Operacional e Matemática Aplicada, UNIFESP-ICT (short course, in Portuguese).

[21] *Randomized Preconditioners for linear systems arising from Interior Point Methods*. Florianópolis, SC, Brazil, Oct. 24–27, 2023. Workshop em Otimização e Problemas Inversos (WSOPI), UFSC (invited talk, in Portuguese).

[22] *Accelerating the Spherical Triangle Algorithm for the Convex-Hull Membership Problem*. Seattle, WA, USA, May 31–June 3, 2023. SIAM Conference on Optimization (OP23/SIOPT23), Session CP1 – Nonlinear Optimization (contributed talk).

[23] *Infeasibility and error bound imply finite convergence of alternating projections*. João Pessoa, PB, Brazil, Oct. 5–7, 2022. IV Congresso Brasileiro de Jovens Pesquisadores em Matemática Pura, Aplicada e Estatística, UFPB (invited talk).

[24] *On the centralization of the circumcentered-reflection method*. Maringá, PR, Brazil, Aug. 1–5, 2022. V Colóquio de Matemática da Região Sul, UEM (invited talk).

[25] *Towards an efficient Augmented Lagrangian method for convex quadratic programming*. Rio de Janeiro, RJ, Brazil, Sept. 23–27, 2019. XIII Brazilian Workshop on Continuous Optimization (BRAZOPT), IMPA (poster presentation).

[26] *An Interior Point Method with No Centrality Parameter*. Curitiba, PR, Brazil, Dec. 12–14, 2018. III Congresso Brasileiro de Jovens Pesquisadores em Matemática Pura, Aplicada e Estatística, UFPR (invited talk).

[27] *Circumcentering the Douglas-Rachford Method*. Foz do Iguaçu, PR, Brazil, July 22–27, 2018. XII Brazilian Workshop on Continuous Optimization (BRAZOPT) (contributed talk).

[28] *On the linear convergence of the circumcentered-reflection method*. Bordeaux, France, July 1–6, 2018. 23rd International Symposium on Mathematical Programming (ISMP 2018), NLP Stream (contributed talk).

[29] Camboriú, SC, Brazil, Oct. 3, 2017. Semana de Licenciaturas – Mesa Redonda, Instituto Federal Catarinense, Campus Camboriú (round table, in Portuguese).

[30] *Circumcentering reflexions methods*. São José dos Campos, SP, Brazil, Feb. 13–15, 2017. Workshop de Otimização, Programa de Verão em Matemática Aplicada 2017, UNIFESP-ICT (contributed talk).

[31] *Circumcentering the Douglas-Rachford method*. Rio de Janeiro, RJ, Brazil, 2017. 31º Colóquio Brasileiro de Matemática, IMPA (contributed talk, in Portuguese).

[32] $\exp(x)$*: Uma Função para a Todas Dominar*. União da Vitória, PR, Brazil, Aug. 26, 2016. XII Semana da Matemática (Palestra de Encerramento), UNESPAR, Campus União da Vitória (closing keynote, in Portuguese).

[33] $\exp(x)$*: uma função para a todas governar*. Camboriú, SC, Brazil, 2015. II Jornada Acadêmica de Matemática, Instituto Federal Catarinense, Campus Camboriú (contributed talk, in Portuguese).

[34] *An Infeasible interior point method with optimized choice of parameters*. Florianópolis, SC, Brazil, 2015. I Encontro de Matemática Aplicada da UFSC (contributed talk).

[35] *Convergence Analysis of an Infeasible Interior-Point Method with Optimized Choice of Parameters*. Pittsburgh, PA, USA, 2015. 22nd International Symposium on Mathematical Programming, Wyndham Grand Hotel (contributed talk).

[36] *Some challenges on Interior Point Methods*. Curitiba, PR, Brazil, 2015. VII Simpósio de Análise Numérica e Otimização, UFPR (contributed talk).

[37] *Perprof-py – A Python Package for Performance Profile*. Florianópolis, SC, Brazil, 2014. X Brazilian Workshop on Continuous Optimization, IMPA (contributed talk).

9 Supervisions

Ph.D. students

2025-now Pedro Testoni Jr., Mathematics, UFSC, Florianópolis, SC, Brazil.

2025-now Luiz-Fernando Bossa, Mathematics, UFSC, Florianópolis, SC, Brazil.

2019-2023 Rafaela Filippozzi (co-advisor), Mathematics, UFSC, Florianópolis, SC, Brazil.

M.Sc. students

2026-now Martin Baraldi Lobe, Mathematics, UFSC, Blumenau, SC, Brazil.

2025-now Victor Afonso Schmitz, Mathematics, UFSC, Blumenau, SC, Brazil.

2024-now Taina da Silva, Mathematics, UFSC, Blumenau, SC, Brazil.

2024-2025 Pedro Testoni Jr., Mathematics, UFSC, Florianópolis, SC, Brazil.

2020-2021 Leonardo de Liz Brockveld, Mathematics, UFSC, Blumenau, SC, Brazil.

2020-2021 Maria Claudia Schmitt Araújo, Mathematics, UFSC, Blumenau, SC, Brazil.

2020-2021 Guilherme Henrique Macieira Araújo (co-advisor), Applied Mathematics, FGV, Rio de Janeiro, RJ, Brazil.

2018-2019 Rafaela Filippozzi (co-advisor), Mathematics, UFSC, Florianópolis, SC, Brazil.

10 Teaching experience

10.1 Administrative responsibilities

2026–now **Pro-tempore Coordinator and Chair of the Program Proposal Drafting Committee**, Programa de Pós-Graduação em Modelagem Computacional e Sistemas Inteligentes (PPGMCSI), UFSC, Campus Blumenau, SC, Brazil.

2024–now **Member of UFSC reseach council** and **Research coordinator** of the Center of Technology, Exact Sciences and Education (CTE), UFSC, Campus Blumenau, SC, Brazil.

2021–2022 **Member of UFSC university council**, representing the tenured tracked professors from the Center of Technology, Exact Sciences and Education (CTE), UFSC, Campus Blumenau, SC, Brazil.

2018–2022 **Head of the Laboratory of Applied and Computational Mathematics**, Department of Mathematics, UFSC, Campus Blumenau, SC, Brazil.

2017-2021 **Member of the board** of the Master program in Mathematics, UFSC, Campus Blumenau, SC, Brazil.

2016 **Member of the committee for recruitment** for tenured tracked positions in applied mathematics, UFSC, Campus Blumenau, SC, Brazil.

2015–2017 **Chair of the Department of Exact Sciences**, UFSC, Campus Blumenau, SC, Brazil.

10.2 Selected courses taught in Mathematics and Engineering

- **Numerical methods.**
- **Applied linear algebra.**
- **Continuous Optimization.**
- **Operations Research: Modeling and software.**
- **Metric Spaces and Real Analysis.**
- **Single and Multi-Variable Calculus.**
- **Introduction to Mathematical Computational Thinking.** .

11 Computer-related skills

11.1 Open-source computer softwares

- `Perprof-py`: `python` package for performance profiling; see https://github.com/abelsiqueira/perprof-py and [20].
- `Nys-IP-PMM`: randomized Nyström preconditioned interior point-proximal method of multipliers for large-scale convex quadratic programming; see https://github.com/udellgroup/Nys-IP-PMM and [2].
- `SigeSC`: georeferenced synthetic population generation and household allocation framework for epidemiological and demographic agent-based modeling; see https://github.com/mariaepinheiro/SigeSC.
- `CRM-CFP`: `julia` toolbox for solving convex feasibility problems with circumcentered-type algorithm; see https://github.com/lrsantos11/CRM-CFP and [5–7, 9–12, 14, 15, 18, 19].

11.2 Programming languages

Julia: Advanced mastering in Julia Language, including research and teaching. Excellent skills in coding optimization and numerical linear algebra algorithms as well as in JuMP modelling language for optimization, have written several algorithms and contributed to open source programs (see my GitHub page).

Python, R and Matlab: Advanced user for both research and teaching.

C/C++ and Fortran: Intermediate coding skills.

Git: Advanced user in version control systems, have working in different modules and contributing to team works with pull requests.

Unix: Advanced mastering in Unix and macOS systems. Well versed in Windows operating systems.

12 Links and other information

- ORCID: https://orcid.org/0000-0002-0083-5871
- Google Scholar: https://scholar.google.com/citations?user=lrsantos11
- Scopus: https://www.scopus.com/authid/detail.uri?authorId=57195422241
- Homepage: https://lrsantos11.github.io/

Languages: Portuguese (mother tongue), English (Fluent), Spanish (Advanced), French (Intermediate).

2016–now Supervised 15+ under-grad final monographs and scientific reports in applied mathematics

Hobby: Basketball (amateur) player.

Other alias: Luiz Rafael dos Santos

Citizenship: Brazilian, Luxembourgeoise (dual citizenship)