

RAUL WAYNE TEIXEIRA LOPES

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EDUCATION AND POSITIONS

- 10/2021 - current** **Postdoctoral researcher in Computer Science.**
With Eunjung Kim.
Laboratoire d'Analyse et de Modélisation de Systèmes pour l'Aide à la Décision - LAMSADE,
Université Paris-Dauphine, CNRS UMR7243.
- 2017 - 2021** **Ph.D. in Computer Science.**
Under the supervision of Victor Campos.
Disjoint paths and the Grid Theorem in digraphs.
Universidade Federal do Ceará, UFC, Fortaleza, Brazil.
- 2015 - 2017** **Master's degree in Computer Science.**
Under the supervision of Victor Campos.
Turán number for disjoint copies of graphs.
Universidade Federal do Ceará, UFC, Brazil.
- 2011 - 2014** **Bachelor's degree in Computer Science.**
Universidade Federal do Ceará, UFC, Brazil.
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INTERNSHIPS

- 09/2018 - 08/2019** **Ph.D. internship.**
Under the supervision of Ignasi Sau.
Relaxations of the Directed Disjoint Paths problem.
Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier - LIRMM,
Montpellier, France.
- 09/2016 - 11/2016** **Internship student.**
Under the supervision of Frédéric Havet.
Subdivisions in directed graphs with large chromatic number.
Institut National de Recherche en Informatique et en Automatique - INRIA, Sophia Antipolis,
France.
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LANGUAGES

- Portuguese** Native language.
- English** Proficient.
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RESEARCH INTERESTS

- Graph theory.
- Algorithms.
- Parameterized complexity.
- Flows.
- Temporal graphs.

PUBLICATIONS

- 1 **A proof for a conjecture of Gorgol.**
V. Campos and **R. Lopes**.
Short version in *Proc. of the VIII Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS)*, volume 50 of *ENTCS*, pages 367-372, **2015**.
[doi: 10.1016/j.endm.2015.07.061](https://doi.org/10.1016/j.endm.2015.07.061).
Full version in *Discrete Applied Mathematics (DAM)*, volume 245, pages 202-207, **2018**.
[doi: 10.1016/j.dam.2017.04.012](https://doi.org/10.1016/j.dam.2017.04.012).
- 2 **Bispindles in strongly connected digraphs with large chromatic number.**
F. Havet, N. Cohen, **R. Lopes**, and W. Lochet.
<https://arxiv.org/abs/1703.02230>.
Short version in *Proc. of the IX Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS)*, volume 62 of *ENTCS*, pages 69-74, **2017**.
[doi: 10.1016/j.endm.2017.10.013](https://doi.org/10.1016/j.endm.2017.10.013).
Full version in *Electronic Journal of Combinatorics (E-JC)*, volume 25 (2), **2018**.
[doi: 10.37236/6922](https://doi.org/10.37236/6922).
- 3 **Adapting the Directed Grid Theorem into an FPT algorithm.**
V. Campos, **R. Lopes**, A. K. Maia, and I. Sau.
<https://arxiv.org/abs/2007.07738>.
Short version in *Proc. of the X Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS)*, volume 346 of *ENTCS*, pages 229-240, **2019**.
[doi: 10.1016/j.entcs.2019.08.021](https://doi.org/10.1016/j.entcs.2019.08.021).
Full version to appear in *SIAM Journal on Discrete Mathematics (SIDMA)*.
- 4 **A relaxation of the Directed Disjoint Paths problem: a global congestion metric helps.**
R. Lopes and I. Sau.
<https://arxiv.org/abs/1909.13848>.
Short version in *Proc. of the 45th International Symposium on Mathematical Foundations of Computer Science (MFCS)*, volume 170 of *LIPICs*, pages 68:1-68:15, **2020**.
Full version in *Theoretical Computer Science (TCS)*, volume 898, pages 75-91, **2022**.
[doi: 10.1016/j.tcs.2021.10.023](https://doi.org/10.1016/j.tcs.2021.10.023).
- 5 **Edge-disjoint branchings in temporal graphs.**
V. Campos, **R. Lopes**, A. Marino, and A. Silva.
<https://arxiv.org/abs/2002.12694>.
Short version in *Proc. of the 31st International Workshop on Combinatorial Algorithms (IWOCA)*, volume 12126 of *LNCS*, pages 112-115, **2020**.
[doi: 10.1007/978-3-030-48966-3_9](https://doi.org/10.1007/978-3-030-48966-3_9).
Full version in *Electronic Journal of Combinatorics (E-JC)*, volume 28 (4), **2021**.
[doi: 10.37236/10229](https://doi.org/10.37236/10229).
- 6 **Coloring problems on bipartite graphs of small diameter.**
V. Campos, G. Gomes, A. Ibiapina, **R. Lopes**, I. Sau, and A. Silva.
<https://arxiv.org/abs/2004.11173>.
Full version in *Electronic Journal of Combinatorics (E-JC)*, volume 28 (2), **2021**.
[doi: 10.37236/9931](https://doi.org/10.37236/9931).
- 7 **On the characterization of networks with multiple arc-disjoint branching flows.**
C. Carvalho, J. Costa, C. Sales, **R. Lopes**, A. K. Maia, and N. Nisse.
<https://hal.inria.fr/hal-03031759>.
Short version currently under review.
- 8 **Parameterized algorithms for Steiner Tree and Dominating Set: bounding the leafage by the vertex leafage.**
C. M. H. de Figueiredo, **R. Lopes**, A. A. de Melo, and A. Silva.
Short version in *Proc. of the 16th International Conference and Workshops on Algorithms and Computation (WALCOM)*, pages 251-262, **2022**.
[doi: 10.1007/978-3-030-96731-4_21](https://doi.org/10.1007/978-3-030-96731-4_21).
- 9 **Twin-width VIII: delineation and win-wins.**
É. Bonnet, D. Chakraborty, E. Kim, N. Köhler, **R. Lopes**, and S. Thomassé.
<https://arxiv.org/abs/2204.00722>.
Short version currently under review.

10 Menger's Theorem for Temporal Paths (Not Walks).

A. Ibiapina, **R. Lopes**, A. Marino, A. Silva.

<https://arxiv.org/abs/2206.15251>.

Short version currently under review.

TALKS AND PARTICIPATION IN EVENTS

2015 Congress

VIII Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS), 2015.

Given talk: A Proof for a Conjecture of Gorgol.

2016 Workshop

Bordeaux Graph Workshop (BGW), 2016.

Given talk: A Proof for a Conjecture of Gorgol.

2016 School

São Paulo School of Advanced Science on Algorithms, Combinatorics and Optimization.

Poster presentation: A Proof for a Conjecture of Gorgol.

Courses taken:

- The regularity method and blow-up lemmas for sparse graphs.
- The perfect matching polytope, solid bricks and the perfect matching lattice.
- Recent progress in approximation algorithms for the Traveling Salesman problem.
- Coloring sparse graphs with few colors.
- The method of hypergraph containers.

2018 Workshop

VIII Latin American Workshop on Cliques in Graphs (LAWCG), 2018.

Given talk: Directed tree-width is FPT.

2019 Congress

45th International Workshop on Graph-Theoretic Concepts in Computer Science (WG), 2019.

Member of the organizing committee.

2020 Congress

31st International Workshop on Combinatorial Algorithms (IWOCA), 2020.

Given talk: Edge-disjoint branchings in temporal graphs.

2020 Congress

45th International Symposium on Mathematical Foundations of Computer Science (MFCS), 2020.

Given talk: A relaxation of the Directed Disjoint Paths problem: a global congestion metric helps.

2021 Talk

Invited online presentation at the Max Planck Institute for Informatics (MPI).

Given Talk: Adapting the Directed Grid Theorem into an FPT algorithm.

2021 Talk

Invited online presentation at the IBS Discrete Mathematics Group (DIMAG) Virtual Discrete Math Colloquium, 2021.

Given Talk: Adapting the Directed Grid Theorem into an FPT algorithm.