

RAUL WAYNE TEIXEIRA LOPES

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EDUCATION AND POSITIONS

- 11/2022 - current** **Postdoctoral researcher in Computer Science.**
With Pierre Aboulker.
Theory, Algorithms, Graphs, and Optimization - TALGO, École normale supérieure, Paris, France.
- 10/2021 - 10/2022** **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.
- Digraphs.
- 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 in *SIAM Journal on Discrete Mathematics (SIDMA)*, volume 33 (3), **2022**.
[doi: 10.1137/21M1452664](https://doi.org/10.1137/21M1452664).
- 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 **From branchings to flows: a study of an Edmonds' like property to arc-disjoint branching flows.**
C. Carvalho, J. Costa, C. Sales, **R. Lopes**, A. K. Maia, and N. Nisse.
<https://hal.inria.fr/hal-03031759>.
Full version in *Discrete Mathematics and Theoretical Computer Science (DMTCS)*, volume 25 (1), **2023**.
[doi: 10.46298/dmtcs.9302](https://doi.org/10.46298/dmtcs.9302).
- 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 in *Proc. of the 17th International Symposium on Parameterized and Exact Computation (IPEC)*, pages 9:1–9:18, **2022**.
 doi: 10.4230/LIPIcs.IPEC.2022.9.
- 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.
- 11 **On Computing Large Temporal (Unilateral) Connected Components.**
 I. Lopes Costa, **R. Lopes**, A. Marino, and A. Silva.
<https://arxiv.org/abs/2302.12068>.
Short version to appear in the *34th International Workshop on Combinatorial Algorithms (IWOCA)*, 2023.

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.
- 2022 **Congress**
17th International Symposium on Parameterized and Exact Computation (IPEC).
Given talk: Twin-width VIII: delineation and win-wins.

JOURNAL AND CONFERENCE REVIEWS

- STACS (1x).
- SODA (1x).
- ESA (1x).
- MFCS (1x).
- ISAAC (1x).
- IPEC (1x).
- ICTS (1x).
- IWOCA (1x).
- LATIN (1x).
- WG (1x).
- Algorithmica (1x).