

Curriculum Vitae

Personal Information

Name: Rabie Mikaël
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Positions

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|-------------|---|
| 2020 — | Maître de Conférence at IRIF - university Paris Cité (Paris, France). |
| 2019 — 2020 | Postdoc at LIP6 - university Paris Sorbonne (Paris, France). |
| 2019 | Postdoc at IRIF - university Paris Diderot (Paris, France). |
| 2017 — 2018 | Postdoc at Aalto University (Helsinki, Finland). |
| 2016 — 2017 | Teaching contract at ENS de Lyon (Lyon, France). |
| 2015 — 2016 | Teaching contract at University Paris Dauphine (Paris, France). |
| 2011 — 2015 | PhD in the LIX (Polytechnique - Palaiseau, France) under the supervision of Olivier Bournez. Defended on the 08-31-2015. |
| 2010 — 2011 | M2 at the MPRI (Paris, France), Master of Computer Science Research. |
| 2008 — 2010 | L3 and M1 at ENS Lyon (Lyon, France), Fundamental Computer Science. |

Research Activities

Key words: Distributed Systems, Graph Theory, Temporal Graphs, Reconfiguration

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| 2020 — | Maître de Conférence at IRIF (Paris, France), in the Distributed Computing team. Distributed Computing [20,21,23], Graph Theory [18, 19, 22, 24]. Supervision of 3 internships and 1 PhD. |
| 2019 — 2020 | Postdoc at LIP6 (Paris, France). Distributed algorithms on graphs, broadcast and convergecast [14,16]. |
| 2019 | Postdoc at IRIF (Paris, France). Distributed algorithms on graphs. LOCAL and DECOUPLED models [13]. |
| 2017 — 2018 | Postdoc in the Distributed Algorithm team (Helsinki, Finlande). Distributed algorithms on graphs, including works on distributed reconfiguration of colorings and MIS [9, 10], Decidability of complexities for LCL problems [11], and lower bounds of distributed problems [12]. |
| 2016 — 2017 | MC2 - LIP (Lyon, France). |
| 2015 — 2016 | LAMSADE (Paris, France), with Jérôme Monnot et Florian Sikora, on Graph Theory. Work on vertex coloration to optimize the number of monochromatic edges. |

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| 2011 — 2015 | <p>PhD - The Power of Weaknesses, what can be Computed with Population, Protocols and Machines (Polytechnique - Palaiseau, France), on complexity, computability and Distributed Systems. Thesis jury:</p> <p style="margin-left: 40px;">Olivier Bournez PhD Supervisor Yves Métivier Referee Rachid Guerraoui Referee Michel Raynal Jury President Julien Cervelle Pierre Fraigniaud Shantanu Das</p> |
| 2011 (5 mo) | <p>M2 Internship - Fast Computing with Community Protocols (LIX - Palaiseau, France), under the supervision of Olivier Bournez. Adaptation of complexity works over Population Protocols on the Community Protocols model. Those works lead to a publication: [6].</p> |
| 2010 (2 mo) | <p>M1 Internship - Game Theory and Trust (Ben Gourion University - Be'er Sheva, Israël), under the supervision of Shlomi Dolev. Use of <i>Coq</i> to prove solutions in Game Theory. Those works lead to a publication: [3].</p> |
| 2010 (3 mo) | <p>M1 Internship - Checkpointing Strategies when failures occur (LIP - Lyon, France), under the supervision of Yves Robert et Frédéric Vivien. Multi-Core system optimization to minimize delays when failures occur. Those works lead to a publication: [2].</p> |
| 2009 (1.5 mo) | <p>L3 Internship - Protocoles de Population et Théorie des jeux (LIX - Palaiseau, France), under the supervision of Olivier Bournez. Restriction of Population Protocols using Game Theory and pavlovian behavior. Those works lead to two publications, one for the symmetric case and one for the asymmetric case: [1,7].</p> |
| 2014 (1.5 mo) | <p>Supervision of a L3 internship - March Chevalier - Rusted Turing Machines (LIX - Palaiseau, France).</p> |
| 2021 (4 mo) | <p>Supervision of a M2 internship - Quentin Ferro - Distributed Recoloring (IRIF).</p> |
| 2022 (4 mo) | <p>Supervision of a M2 internship - Minh Hang Nguyen - Recoloring in Temporal Graphs (IRIF).</p> |
| 2023 (4 mo) | <p>Supervision of a M2 internship - Hening Zheng - Energy-Efficient Distributed Algorithms for Networks (IRIF).</p> |
| 2024 (2 mo) | <p>Supervision of a Bachelor internship - Vijaya Anand - Complexities of the SLEEPING model on Trees (IRIF).</p> |
| 2022 – | <p>Co-supervision of a PhD with Pierre Fraigniaud - Minh Hang Nguyen - Parallel Reconfiguration in Static and Dynamic Graphs (IRIF).</p> |
| | <p>Research Grants</p> |
| 2022 — | <p>Project member of ANR TempoGral (IRIF, LaBRI, LITIS).</p> |
| 2024 — | <p>Project lead of ANR ENEDISC (IRIF, LaBRI, LIRIS).</p> |

Teachings and activities

If not precised, the teaching is for computer science students.

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| | <u>University Paris Cité</u> | |
| 2021 — | Elected member of Conseil de l'UFR d'Informatique Titular elected member of Conseil Scientifique de l'IRIF Member of the Commission Service | |
| 2021 — | Full service of Maître de Conférences - 192 hours | |
| 2020 — 2021 | Service Maître de Conférences - 152 hours + 40 (discharge) PC member of Algotel 2021, 2023 PC member of SIROCCO 2024 Organization comitee member of GDR IM days 2023 | |
| | <u>University Paris Sorbonne (Paris 6)</u> | |
| 2019 — 2020 | C programming | 48h, L1, Isabelle Mounier |
| | Network algorithms ³⁴ | 16h, M2, Franck Petit |
| | <u>Aalto University</u> | |
| 2018 | ALGO 2018 local organizing committee member | |
| | <u>ENS de Lyon</u> | |
| | Computer Science funds ¹² | 32h, L3, Guillaume Hanrot |
| | Advanced Algorithmic ¹ | 32h, L3, Anne Benoît |
| 2016 — 2017 | Logic ¹ | 32h, L3, Natacha Portier |
| | Performance Evaluation in Networks | 28h, M1, Eric Thierry |
| | Introduction to Computer Science ²³ | 8h, M2 Physics, Christophe Crespelle |
| | <u>University of Paris-Dauphine</u> | |
| 2015 — 2016 | Maple and Excel programming ¹⁴ | 36h, L1 Economy, Denis Cornaz |
| | VBA programming ¹⁴ | 48h, L2 Economy, Lucie Galand |
| | Python programming | 20h, L2, Vangelis Paschos |
| | <u>Polytech</u> | |
| 2014 — 2015 | C programming and project ² | 30h, L3, Joël Falcou |
| | <u>University Paris Sud</u> | |
| 2014 — 2015 | Graph Theory | 24h, M1, Laurent Rosaz |
| 2013 — 2014 | Math for computer science ¹ | 24h, L2, Christine Paulin |
| 2012 — 2014 | Caml programming and project | 2*36h, L3, Sylvain Conchon |
| | <u>Polytechnique</u> | |
| 2011 — 2012 | Java programming | 40h, L3, François Morain |

¹Redaction and evaluation of homework

²Exercise creation

³Tutorial given in English

⁴Teaching session included, exam correction

Scientific Contributions

Journal

1. Olivier Bournez, Jérémie Chalopin, Johanne Cohen, Xavier Koeper, and M.R. **Population protocols that correspond to symmetric games.** In *International Journal of Unconventional Computing (IJUC)*, 9(1-2):5–36, 2013.
6. Shlomi Dolev, Panagiota N. Panagopoulou, M.R., Elad Michael Schiller, and Paul G. Spirakis. **Rationality authority for provable rational behavior.** In *Algorithms, Probability, Networks, and Games*, pages 33–48, Springer, 2015.
2. Olivier Bournez, Johanne Cohen, and Mikaël Rabie. **Homonym population protocols.** *Theory of Computing Systems 62, no. 5 (2018)*, pages 1318–1346, 2018.
15. Keren Censor-Hillel, M.R. **Distributed Reconfiguration of Maximal Independent Sets.** in *Journal of Computing and System Sciences*, 2020.
17. Alkida Balliu, Sebastian Brandt, Juho Hirvonen, Dennis Olivetti, M.R., Jukka Suomela. **Lower bounds for maximal matchings and maximal independent sets.** In *JACM 2021*. arXiv:1901.02441.
16. Gewu Bu, Zvi Lotker, Maria Potop-Butucaru, M.R. **Lower and upper bounds for deterministic convergecast with labeling schemes.** In *Theoretical Computer Science 2023*.
18. Paul Bastide, Marthe Bonamy, Anthony Bonato, Pierre Charbit, Shahin Kamali, Théo Pierron, M.R. **Improved pyrotechnics : Closer to the burning graph conjecture.** *EJ-C 2023*, arXiv:2110.10530.

Conferences

* Means that I did the presentation at the conference.

- 3* Olivier Bournez, Jérémie Chalopin, Johanne Cohen, Xavier Koepler, and M.R. **Computing with pavlovian populations.** In *15th International Conference On Principles Of Distributed Systems, OPODIS 2011*, pages 409–420. Springer, 2011.
4. Marin Bougeret, Henri Casanova, M.R., Yves Robert, and Frédéric Vivien. **Checkpointing strategies for parallel jobs.** In *2011 International Conference for High Performance Computing, Networking, Storage and Analysis, SC 2011*, page 33. ACM.
- 5* Olivier Bournez, Jonas Lefèvre, and M.R. **Trustful population protocols.** In *27th International Symposium on Distributed Computing, DISC 2013*, pages 447–461, Springer, 2013.
- 7* Olivier Bournez, Johanne Cohen, and M.R. **Homonym population protocols.** In *Third International Conference on Networked Systems, NETYS 2015*, pages 125–139, Springer, 2015.
- 8* M.R. **Global versus local computations: Fast computing with identifiers.** In *International Colloquium on Structural Information and Communication Complexity, SIROCCO 2017*, pages 90–105, Springer, 2017.

- 9* Marthe Bonamy, Paul Ouvrard, M.R., Jukka Suomela, Jara Uitto. **Distributed Recoloring**. In *32nd International Symposium on Distributed Computing, DISC 2018*, pages 12:1–12:17, Springer, 2018.
- 10* Keren Censor-Hillel, M.R. **Distributed Reconfiguration of Maximal Independent Sets**. In ICALP 2019 (Best Paper), arXiv:1810.02106.
- 11. Alkida Balliu, Sebastian Brandt, Yi-Jun Chang, Dennis Olivetti, M.R., Jukka Suomela. **The distributed complexity of locally checkable problems on paths is decidable**. In PODC 2019, arXiv:1811.01672.
- 12. Alkida Balliu, Sebastian Brandt, Juho Hirvonen, Dennis Olivetti, M.R., Jukka Suomela. **Lower bounds for maximal matchings and maximal independent sets**. In FOCS 2019 (Best Paper). arXiv:1901.02441.
- 13. Carole Delporte-Gallet, Hugues Fauconnier, Pierre Fraigniaud, M.R. **Distributed Computing in the Asynchronous LOCAL model**. In SSS 2019 (Brief Announcement).
- 14. Gewu Bu, Maria Potop-Butucaru, M.R. **Wireless Broadcast with short labels**. In NETYS 2020.
- 20. Nicolas Bousquet, Laurent Feuilloley, Marc Heinrich, M.R. **Distributed recoloring of interval and chordal graphs**. In OPODIS 2021, arXiv:2109.06021.
- 21. Pierre Fraigniaud, Patrick Lambein, M.R. **Distributed Computing in the Asynchronous LOCAL model**. In PODC 2022 (BA) and DISC 2022, arXiv:2207.11198.
- 22. Swan Dubois, Laurent Feuilloley, Franck Petit, M.R. **When Should You Wait Before Updating? - Toward a Robustness Refinement**. In SAND 2023 (Best Paper), arXiv:2304.05831.
- 23* Johanne Cohen, Laurence Pilard, M. R., Jonas S enizergues. **Making Self-Stabilizing Algorithms for Any Locally Greedy Problem**. In SAND 2023, arXiv:2304.05831.
- 24. Michel Habib, Minh-Hang Nguyen, M.R. and Laurent Viennot. **Forbidden Patterns in Temporal Graphs Resulting from Encounters in a Corridor**. in SSS 2023, arXiv:2302.07666.
- 25. Alkida Balliu, Pierre Fraigniaud, Patrick Lambein-Monette, Dennis Olivetti, M.R. **Asynchronous Fault-Tolerant Distributed Proper Coloring of Graphs**. in DISC 2024, arXiv:2408.10971.

Unpublished

- 19. Nicolas Bousquet, Laurent Feuilloley, Marc Heinrich, M.R. **Short and local transformations between $(\Delta + 1)$ -colorings**. Soumis, arXiv:2203.08885.
- 26. Thomas Bellitto, Johanne Cohen, Bruno Escoffier, Minh-Hang Nguyen, M.R. **Canadian Traveller Problems in Temporal Graphs**. Soumis, arXiv:2407.16491.
- 27. Alkida Balliu, Mohsen Ghaffari, Fabian Kuhn, Augusto Modanese, Dennis Olivetti, M.R., Jukka Suomela, Jara Uitto. **Shared Randomness Helps with Local Distributed Problems**. Soumis, arXiv:2407.05445.
- 28. Fabien Dufoulon, Pierre Fraigniaud, M.R., Hening Zheng. **Distributed Coloring in the SLEEPING Model**. arXiv:2405.10058.

Hobbies

18 years of theater acting, 6 years of improvisation acting. 3 years as Treasurer in the improvisation troupe Les N'improtequai (ENS ULM).

Player and judge of the card game Magic the Gathering (I judged competitive events of thousands of players in Europe, US and Japan). Organizer of online and in person conferences.