

# Mathieu Mari

## Curriculum Vitae.

Assistant professor (*Maitre de Conférences*) at the Computer science department of the Faculty of sciences of the University of Montpellier, and researcher at LIRMM (Laboratoire d'Informatique, de Robotique et de Micro-électronique de Montpellier).

## Publications

### Conferences

- SODA 2024 **Shortest Disjoint Paths on a Grid**, with Anish Mukherjee, Michał Pilipczuk and Piotr Sankowski.
- WAOA 2023 **Online Hitting Set of  $d$ -Dimensional Fat Objects**, with Shanli Alefkhani, Nima Khodaveisi.
- IPEC 2023 **A Parameterized Approximation Scheme for the Geometric Knapsack Problem with Wide Items**, with Timothé Picavet and Michał Pilipczuk.
- AAMAS 2023 **Online matching with delays and stochastic arrival times**, with Michał Pawłowski, Runtian Ren and Piotr Sankowski, [arXiv](#).
- SODA 2022 **A 3-Approximation Algorithm for Maximum Independent Set of Rectangles**, with Waldo Galvez, Arindam Khan, Tobias Mömke, Madhusudhan Reddy Pittu, Andreas Wiese, [arXiv](#).
- ICALP 2021 **Approximating maximum integral multiflows on bounded genus graphs**, with Chien-Chung Huang, Claire Mathieu and Jens Vygen, [arXiv](#).
- STACS 2020 **Fixed-parameter algorithms for Unsplittable Flow Cover**, with Andrés Cristi and Andreas Wiese, [paper](#).
- SODA 2020 **Ultimate greedy approximation of independent sets in subcubic graphs**, with Piotr Krysta and Nan Zhi, [arXiv](#).
- APPROX 2019 **Maximizing Covered Area in the Euclidean Plane with Connectivity Constraint**, with Chien-Chung Huang, Claire Mathieu, Joseph S. B. Mitchell and Nabil H. Mustafa, [paper](#).

### Journals

- DCG (2023) **Approximating Maximum Integral Multiflows on Bounded Genus Graphs**, with Chien-Chung Huang, Claire Mathieu and Jens Vygen, [paper](#).
- TOCS (2023) **Fixed-parameter algorithms for Unsplittable Flow Cover**, with Andrés Cristi and Andreas Wiese, [paper](#).
- SIAM J. Discret. Math. (2021) **An Approximation Algorithm for Fully Planar Edge-Disjoint Paths**, with Chien-Chung Huang, Claire Mathieu, Kevin Schewior and Jens Vygen, SIAM J. Discret. Math., [arXiv](#).

### Workshops

**Dynamic Pricing with Bayesian Updates from Online Reviews**, with Jose Correa and Andrew Xia and , ML for Economic Policy at NeurIPS 2020 ([arXiv](#)).

### PhD Thesis

- Sept 2020 **Manuscript : Greedy approaches to approximation of some NP-hard combinatorial optimization problems**, Ecole normale supérieure de Paris, PSL University.

## Employment

- 2023- **Maitre de Conférences**, in LIRMM (research team : AIGCo) and at the Computer Science department of the Faculty of Sciences of the University of Montpellier, Montpellier, France.
- 2021-2023 **Postdoctoral Fellow**, IDEAS NCBR : Polish centre of innovation in the field of artificial intelligence, Warsaw, Poland.
- 2020-2023 **Postdoctoral Fellow**, University of Warsaw, Poland.  
Financed by ERC TugBoat hold by Piotr Sankowski.

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## Education

- 2017-2020 **PhD in Theoretical Computer Science**, *École Normale Supérieure (ENS)* • *team TALGO*, Paris, thesis : Greedy approaches to approximation of some NP-hard combinatorial optimization problems, defence : September 2020.  
Supervising by Chien-Chung Huang and Claire Mathieu. Jury : Christoph Dürr (president), Claire Mathieu, Chien-Chung Huang, Cyril Gavoille (report), Dimitrios Thilikos, Magnus Halldorsson, Alantha Newman, Bruce Shepherd (report).
- 2016-2017 **Master Parisien de Recherche Opérationnelle - Master 2 (with honors, 15.2/20)- Operational research**, • *CNAM* • *Paris Saclay* • *ENSTA* • *ENPC* • *Ecole Polytechnique*, Paris.
- 2015-2016 **Agrégation de Mathématiques option Informatique** • **Master MEEF** , *Rennes*.  
rank : 34<sup>e</sup>
- 2014–2015 **Master 1 - Mathematics** , • *Ecole Normale Supérieure de Rennes* • *Université de Rennes 1*, Rennes.
- 2013–2014 **Three-years university Degree (Mathematics)** , • *Ecole Normale Supérieure de Rennes* • *Université de Rennes 1*, Rennes.
- 2013–2014 **Three-year university Degree (Computer Science)**, • *Ecole Normale Supérieure de Rennes* • *Université de Rennes 1* , Rennes.
- 2012–2013 **Classe préparatoire aux grandes écoles : MP\***, • *Lycée Masséna*, Nice.  
**TIPE (french)** : Optimisation de l'aire et du périmètre des polygones inscrits dans une ellipse/ Petit et grand théorèmes de Poncelet. ([link](#))
- 2011–2012 **Classe préparatoire aux grandes écoles : MPSI**, • *Centre Internationnal de Valbonne*, Sophia-Antipolis.
- 2011 **Baccalauréat (Scientist) Mathematics.**, • *Lycée Amiral de Grasse*, Grasse.  
with honors, 15.3/20

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## Research experiences

### Short research visits

- June 2023 Fabrizio Grandoni in Lugano, Switzerland
- March 2022 Bartosz Walczak in Krakow, Poland
- Dec 2019 Jens Vygen in Bönn, Germany
- Sept 2019 Philip N. Klein in Providence, USA

### Reseach internships

- Feb/June 2019 **Universidad de Chile**, with *José Corrêa* and *Andreas Wiese*, I worked on problems in Algorithmic Game Theory and FPT Algorithms.
- April/July 2017 **University of Liverpool**, with *Piotr Krysta*, Approximation Algorithms, [report](#) 18.5/20.
- May/June 2015 **University of Cape Town**, with *David Erwin*, Graph theory and Algorithms for Coloring, [report](#).
- May/July 2014 **Université de Lille**, with *David Chataur*, Algebraic Topology – Structure, Graphs and Algorithms, [report](#).

### Talks/Seminars

- March 2024 **Seminar AIGCo**, Shortest Disjoint Paths on a Grid.
- Feb 2024 **Algoridam Workshop, Fontainebleau**, Shortest Disjoint Paths on a Grid.
- Jan 2024 **Journées GDR-IM JCRAALMA**, Problèmes de connexité dans les graphes dynamiques, [video](#).
- Jan 2024 **Conference SODA24, Marseille**, Shortest Disjoint Paths on a Grid.
- April 2023 **Seminar talk of ECO, Marseille**, A  $(2 + \varepsilon)$ -Approximation Algorithm for Maximum Independent Set of Rectangles.
- Feb 2023 **Seminar talk of AIGCo, Montpellier**, A  $(2 + \varepsilon)$ -Approximation Algorithm for Maximum Independent Set of Rectangles.
- Feb 2023 **Seminar talk of AIGCo, Montpellier**, A  $(2 + \varepsilon)$ -Approximation Algorithm for Maximum Independent Set of Rectangles.

- March 2022 **TCS seminar at Jagiellonski University, Krakow**, A  $(2 + \varepsilon)$ -Approximation Algorithm for Maximum Independent Set of Rectangles ([video](#)).
- Dec 2021 **Algoritmmy seminar, University of Warsaw**, A  $(2 + \varepsilon)$ -Approximation Algorithm for Maximum Independent Set of Rectangles ([video](#)).
- July 2021 **Seminar talk of LIS, Aix-Marseille University, France**, Approximating maximum integral multiflows on bounded genus graphs.
- July 2021 **talk at ICALP, Glasgow (online)**, Approximating maximum integral multiflows on bounded genus graphs ([video](#)).
- Sept 2020 **PhD Defence, Ecole normale supérieure, Paris**, Greedy approaches to approximation of some NP-hard combinatorial optimization problems.
- April 2020 **Talk at Max Planck institute, Sarrbrucken**, An Approximation Algorithm for Fully Planar Edge-Disjoint Paths.
- March 2020 **Talk at STACS, Montpellier, France**, Fixed-parameter algorithms for Unsplittable Flow Cover.
- Jan 2020 **Talk at SODA, Salt Lake City**, Ultimate greedy approximation of independent sets in subcubic graphs.
- Dec 2019 **Seminar at the Research Institute for Discrete Mathematics, University of Bonn**, Ultimate greedy approximation of independent sets in subcubic graphs.
- Dec 2019 **Seminar Talgo, ENS Ulm, Paris**, Ultimate greedy approximation of independent sets in subcubic graphs.
- Sept 2019 **Talk at APPROX, MIT, Boston**, Maximizing Covered Area in a Euclidean Plane with Connectivity Constraint.
- Sept 2019 **Seminar talk at LIP6, UMPC, Paris**, Maximizing Covered Area in a Euclidean Plane with Connectivity Constraint.
- Sept 2019 **Seminar Talgo, ENS Ulm, Paris**, Maximizing Covered Area in a Euclidean Plane with Connectivity Constraint.
- March 2019 **Seminar at Universidad de Chile, Santiago de Chile**, Maximizing Covered Area in a Euclidean Plane with Connectivity Constraint.
- Jan 2018 **Finalist Best Master thesis talk at ROADEF, Lorient, France**, Etude de l'algorithme glouton pour résoudre le problème du stable maximum..
- Nov 2017 **Talk at GT CoA, Lyon, France**, Study of greedy algorithm for solving Maximum Independent Set problem.

### Community work

**Reviewing work**, I have reviewed about 24 papers for the following conferences/journals :, ICALP 24 x3, ACM TALG, WAOA 23, MFCS 23, WG 23, Algorithmica x2, ACM TALG x2, SoCG 22 Algotel 22, APPROX 22, AISTATS 22, ICALP 22 ICALP 21, STOC 21, WG 21, ESA 20, ISAAC 20, MFCF 20, SoCG 20, WAOA 19 .

- June 2018 **Co-organizer of the “journée des doctorants” founded by SIF (resp : Gilles Dowek)**, One day gathering about 20 PhD students in France, with two invited talks (José Correa, Universidad de Chile and Timothy Bourke, ENS Paris), PhD students' talks/posters and a small mathematical puzzles workshop.

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### Grants and Awards

- July 2013 **Normalien scholarship**, • *École Normale Supérieure de Rennes* • *Computer science selective exam*, Rank : 1.
- July 2017 **CDSN PhD scholarship**, • *École Normale Supérieure (Paris)* • .
- January 2018 **ROADEF 2018**, *Finalist of the Best Master Thesis award in Optimisation/Operations Research.*

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### Teaching

[At the Faculty of Sciences of Université de Montpellier](#)

- 2023-24 Modèles de Calcul - L2
- 2023-24 Algorithmique Avancée - M2 ALGO
- 2023-24 Logique, Calculabilité, Complexité - M1

2023-24 Algorithmique 4 - L3

2023-24 Algèbre linéaire - M1

### Other teachings

Mar - June 2023 **Teaching assistant**, *University of Warsaw (MIMUW)*, Advanced Algorithms (22h) (Prof. ref : Łukasz Kowalik).

2017-2020 **Teaching assistant**, *UPMC and Université Paris-Diderot*, Paris.

64h Maths basics for L1 students (1M002, resp : Julien Marché), [pdf course](#)

32h Graphs and Combinatorics (2M226, resp : Arnau Padrol), [pdf course](#)

32h Arithmetic and Cryptography for L2 students (2M120, resp : Laurent Koelblen), [website course](#)

64h Introduction to Python for L2/L3 students (resp : Julien Guillod), [website course](#)

12h Introduction to Algorithms for Master students of Bio-Info (resp : Roberto Mantaci)

2015-2018 **Oral examiner (mathematics)** “**colleur en classes prépa**”.

2015-2016 MP1 Lycée Chateaubriand, Rennes (resp : Marc Fleury), 2h/week

2016-2018 MP2 Lycée Saint-Louis, Paris (resp : Olivier Bouverot), 2h/week

### Supervising

Feb - July 2023 **Nima Khodaveisi and Shanli Alefkhani**, (*Undergrad student from Teheran University*), The internship is about the design of algorithms for geometric problems. The work we did together has resulted in a paper published in WAOA 2023 (see above).

Oct '22 - Feb '23 **Timothé Picavet**, (*M2 student from ENS Lyon*) at the *University of Warsaw*, The internship subject is about the design of FPT approximation algorithms for geometric packing problems, co-supervised with Michał Pilipczuk. The work we did together has resulted in a paper published in IPEC 2023 (see above).

May - July 2023 **Olivier Idir**, (*L3 student from ENS Lyon*), The internship subject was about the [Sprouts game](#), co-supervised by Olivier Serre and Pierre Ohlmann.

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## Languages

French first language

English Bilingual (TOEIC : 820)

Spanish good level

Polish Good bases

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## Some hobbies

Sport Highline, climbing, hiking, cycling, free diving, snowboarding.

Music Classical guitar, tenor sax, flute, traditional music from Provence.

Others do-it-yourself, painting, photography, game of Go.

last update : May 2024