

Theophile THIERY

Postdoctoral Researcher

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Research interests

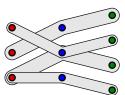
I am interested in constrained optimisation problems in theory and practice. My results include improved hardness of approximation, state-of-the-art approximation algorithms in various computational environments, and the explanation of the success of heuristics for sparse subset selection problems.

Education

- 2023-2025 **Postdoctoral Researcher**, Ecole Polytechnique Fédérale de Lausanne, Lausanne.
- 2019–2023 **Ph.D. in Theoretical Computer Sciences**, Queen Mary University of London, London.
Supervisor: Dr. Justin Ward
- 2013–2019: **Bachelor and Master of Science in Applied Mathematics**, Ecole Polytechnique Fédérale de Lausanne.

Projects and Publications

Hardness and Algorithms for Independence Systems

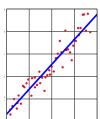


Designed state-of-the-art approximation algorithm for Weighted k -Set Packing and Weighted k -Matroid Intersection via distorted local-search algorithms. Subsequently obtained asymptotical optimal hardness.

- Talks:
- Zinal Winter School, January'24 ■ Combinatorics Seminar, LSE, April'23
 - Symposium on Discrete Algorithms (SODA'23), January 2023
 - Combinatorial Optimization and Logistic Seminar, Universität Bremen, October 2022
 - PostGraduate Day, QMUL, May 2022 ■ Combinatorics group, QMUL, March 2022

- Publications**
- Singer N, and **Thiery T**. "Better Approximation for Weighted k -Matroid Intersection". *Submitted. Available on ArXiv*.
 - Lee E, Svensson O, and **Thiery T**. "Asymptotically Optimal Hardness for k -Set Packing and k -Matroid Intersection". *Submitted. Available on ArXiv*.
 - **Thiery T**. "Approximation Algorithms for Independence Systems". *Ph.D. Thesis*.
 - **Thiery T** and Ward J. "An Improved Approximation for Maximum Weighted k -Set Packing". In: Symposium on Discrete Algorithms, **SODA'23**.

Connecting Regression and Submodularity,

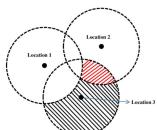


Devise efficient algorithms for Sparse Least-Square Regression, Bayesian A-Optimal Design, and Column Subset Selection via a new connection to submodular functions.

- Talks:
- COLT conference, London, June 2022 ■ Combinatorics group, QMUL, July 2021
 - Combinatorics Ph.D. seminar, QMUL, March 2021

- Publications**
- **Thiery T** and Ward J. "Two-Sided Weak Submodularity for Matroid Constrained Optimization and Regression". In: Conference on Learning Theory, **COLT'22**.

Multipass Algorithms for Submodular Functions Maximization,



Develop state-of-the-art streaming approximation algorithms to maximize submodular function under matroid and p -matchoid constraints.

- Talks:
- DISOPT seminar, Ecole Polytechnique Fédérale de Lausanne, June 2020
 - APPROX/RANDOM conference, virtual, August 2020

- Publications**
- Huang C-C, **Thiery T**, and Ward J. "Improved Multi-Pass Streaming Algorithms for Submodular Maximization with Matroid Constraints". In: **APPROX/RANDOM'20**.

Experiences and Visits



Universität Bremen: Academic Visit

October 2022–November 2022

Host: Prof. Dr. Nicole Megow. Integration of machine learned advice to online matching problems to bridge theory and practice and go beyond worst-case analysis.



TRANSP-OR: Research Assistant

March 2019 - June 2019

Development of a new framework, which incorporates customers' utility, to model and analyze possible Nash equilibria on the Italian railway network. <https://transp-or.epfl.ch/>



Zuse Institute Berlin (ZIB): Research Intern

March 2018 – August 2018

Developed and successfully programmed an optimality certificate for mixed-integer problem solutions. We proposed and extended existing methods. Emphasis on mathematical programming optimization. <http://www.zib.de>



Goodeed: Cofounder

2012-2013

Prizewinner of "100 jours pour entreprendre" in 2013, **Goodeed** is a website making donations to governmental associations. We launched a project that was able to convince exterior partners. In 2021, Goodeed donated more than 3 million euros to associations.

Teaching

Teaching **QMUL:** Calculus I (2 semesters), Linear Programming and Games (3 semesters),

Assistant **EPFL:** Analysis I (5 semesters), Advanced Linear Algebra, Discrete Optimization.

Supervision Master Thesis Supervision of Konrad Litwiński (*Online Matching with a Sample, EPFL*).
Bachelor Thesis Supervision of Tsz Yin Sin (joint with Miltiadis Stouras) (*Data-Driven Portofolio Solutions, EPFL*).

Professional Service

Reviewing: IPCO'24, STACS'24, WAOA'23, ICALP'23, APPROX'23, Operations Research Letters, Journal of Combinatorial Optimization.

Language and Skills

Languages: ■ French (native) ■ English (C1) ■ German (B2)

Programming: ■ C++/C (advanced) ■ Python (intermediate) ■ Matlab (intermediate)

Extracurricular Activities

Sports in competition: *Artistic Gymnastic, Ultimate Frisbee* – Mixed National Swiss Champion 2019 and part of the Swiss National Team. **Other:** Former [Math Circle Member](#): help students to enjoy maths, and make advanced maths more popular.

References

Dr. Justin Ward

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Prof. Ola Svensson

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