

Theophile THIERY

Postdoctoral Researcher

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Research interests

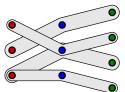
My research focuses on combinatorial optimisation problems in theory and practice. My goal is to develop simple and efficient algorithms for central theoretical computer science problems that will act as foundations in practical applications. I keep practice close to my research and am interested in connecting both worlds.

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

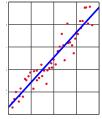


Designed state-of-the-art approximation algorithm for Weighted k -Set Packing and Weighted k -Matroid Intersection via distorted local-search algorithms. Subsequently obtained asymptotical optimality.

- Talks:**
- Aussois Combinatorial Optimization Workshop, January'25
 - 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,

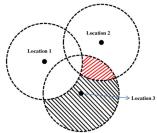


Devise efficient algorithms for Sparse Least-Square Regression, Bayesian A-Optimal Design, and Column Subset Selection via a new connection to submodular functions.

- 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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