



Tom M. Ragonneau

POSTDOCTORAL FELLOW

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Education

The Hong Kong Polytechnic University

Hong Kong, China

Doctor of Philosophy

Sept. 2019–Aug. 2022

- Supervised by Dr. Zaikun Zhang and co-supervised by Prof. Xiaojun Chen.
- Supported by the Research Grants Council of Hong Kong under the Hong Kong PhD Fellowship Scheme.
- Thesis title: “Model-Based Derivative-Free Optimization Methods and Software” [4].

Toulouse INP-ENSEEIH

Toulouse, France

Master of Science in Computer Science

Sept. 2018–Aug. 2019

- Graduated in Performance in Software, Media, and Scientific Computing.
- Research project: establish a deep learning approach for estimating the coastal bathymetry [3].

Toulouse INP-ENSEEIH

Toulouse, France

Master of Engineering in Computer Science and Applied Mathematics

Sept. 2016–Aug. 2019

- Graduated in High-Performance Computing and Big Data.

Lycée Carnot

Dijon, France

Preparatory Classes for Grandes Écoles

Sept. 2014–Aug. 2016

- Undergraduate studies to prepare for a highly competitive national examination.
- Subjects: Mathematics and Physics.

Work experience

The Hong Kong Polytechnic University

Hong Kong, China

Postdoctoral Fellow

March 2023–Ongoing

- Laboratory: CAS AMSS-PolyU Joint Laboratory of Applied Mathematics.
- Research projects related to derivative-free optimization.
- Maintenance of the COBYQA [5, 8] and PDFO [2, 6] packages.

The Hong Kong Polytechnic University

Hong Kong, China

Research Associate

Sept. 2022–Feb. 2023

- Research projects related to derivative-free optimization.
- Finalization of the development of the COBYQA [5, 8] package.
- Maintenance of the PDFO [2, 6] package.

The Hong Kong Polytechnic University

Hong Kong, China

Research Assistant

March 2019–Aug. 2019

- Initial development of the PDFO [2, 6] package.
- End-of-study internship for the Master of Engineering.

Research interests

My research interests include mathematical optimization and its applications, especially

- derivative-free optimization methods and methods using generalized derivatives, and
- methods of successive quadratic programming type.

Publications

JOURNAL ARTICLES

- [1] T. M. Ragonneau and Z. Zhang. “An optimal interpolation set for model-based derivative-free optimization methods.” 2023. doi: [10 . 48550 / arXiv . 2302 . 09992](https://doi.org/10.48550/arXiv.2302.09992). arXiv: [2302 . 09992](https://arxiv.org/abs/2302.09992) [[math . OC](#)].
- [2] T. M. Ragonneau and Z. Zhang. “PDFO: a cross-platform package for Powell’s derivative-free optimization solvers.” 2023. doi: [10 . 48550 / arXiv . 2302 . 13246](https://doi.org/10.48550/arXiv.2302.13246). arXiv: [2302 . 13246](https://arxiv.org/abs/2302.13246) [[math . OC](#)].
- [3] R. Benschila, G. Thoumyre, M. Al Najjar, G. Abessolo Ondo, R. Almar, E. Bergsma, G. Hugonnard, L. Labracherie, B. Lavie, T. M. Ragonneau, S. Ehouarn, B. Vieublé, and D. Wilson. “A deep learning approach for estimation of the near shore bathymetry.” *J. Coast. Res.* 95.sp1 (2020), pages 1011–1015. doi: [10 . 2112 / SI95 - 197 . 1](https://doi.org/10.2112/SI95-197.1).

PHD THESIS

- [4] T. M. Ragonneau. “Model-Based Derivative-Free Optimization Methods and Software.” PhD thesis. Hong Kong, China: Department of Applied Mathematics, The Hong Kong Polytechnic University, 2022. URL: <https://theses.lib.polyu.edu.hk/handle/200/12294>.

SOFTWARE

- [5] T. M. Ragonneau and Z. Zhang. *COBYQA*. Version 1.0.0. 2023. URL: <https://www.cobyqa.com>.
- [6] T. M. Ragonneau and Z. Zhang. *PDFO*. Version 2.0.2. 2023. URL: <https://pdfo.net>.

WORK IN PROGRESS

- [7] R. Égelé and T. M. Ragonneau. *Using derivative-free optimization with Bayesian optimization to solve hyperparameter tuning problems*.
- [8] T. M. Ragonneau and Z. Zhang. *COBYQA: a derivative-free trust-region SQP method*.
- [9] T. M. Ragonneau and Z. Zhang. *New perspectives on the SQP subproblem*.
- [10] C. Huang, T. M. Ragonneau, and Z. Zhang. *OptiProfiler*. 2023. URL: <https://optiprofiler.com>.

Presentations

The 10th International Congress on Industrial and Applied Mathematics

Tokyo, Japan

COBYQA: a derivative-free trust-region SQP method for nonlinearly constrained optimization

2023

- Minisymposium: Derivative-Free Optimization Theory, Methods, and Software.

The 14th International Conference of Numerical Optimization and Numerical Linear Algebra

Taiyuan, China

COBYQA: a derivative-free trust-region SQP method for nonlinearly constrained optimization

2023

- Contributed talk.

SIAM Conference on Optimization

Seattle, WA, USA

COBYQA: a derivative-free trust-region SQP method for nonlinearly constrained optimization

2023

- Minisymposium: Blackbox Optimization and Derivative-Free Algorithms II - Part II of III.

SIAM Conference on Computational Science and Engineering

Amsterdam, Netherlands

COBYQA: a derivative-free trust-region SQP method for nonlinearly constrained optimization

2023

- Minisymposium: Theory and Applications of Derivative-Free Optimization - Part II of II.

SIAM Conference on Optimization

Online

PDFO: a cross-platform MATLAB/Python interface for Powell’s derivative-free optimization solvers

2021

- Minisymposium: Advances in Derivative-Free Optimization - Part II of IV.

Teaching

The Hong Kong Polytechnic University

Hong Kong, China

Basic Mathematics II - Calculus and Linear Algebra

2021

- Tutorials (40 hours).
- Bachelor level.

The Hong Kong Polytechnic University

Hong Kong, China

Basic Mathematics I - Calculus and Probability & Statistics

2020

- Tutorials (40 hours).
- Bachelor level.

Peer reviews

SIAM Journal on Optimization, IMA Journal of Numerical Analysis, and INFORMS Journal on Computing.

Skills

Programming Python, MATLAB, Julia, Caml, Fortran, C/C++, Java, Ada, Linux, macOS, shell (Bash/Zsh), \LaTeX , Git, SVN.
Soft skills Interpersonal communication, pedagogy, critical thinking, patience, empathy, scientific rigor.

Languages

English Full professional proficiency.
French Native proficiency.
German Limited working proficiency.
Cantonese Elementary proficiency.