Arthur Mahéo

I am an operations researcher who specialises in (public) transportation problems. My interests are in decomposition methods and high-performance algorithms.

25 Phoenix Street, South Yarra VIC 3141, Australia
maheo.arthur@gmail.com +61 (0) 481 091 465 0000-0001-9175-3224

Employment

Monash University, Melbourne, Australia — Aug. 2019 – ongoing
Research fellow

- Develop a centralised, congestion-aware routing service for Melbourne.
- ARC grant with Daniel Harabor and Mark Wallace.

Education

Australian National University, Canberra, Australia
PhD in Operations Research — 2020

- Supervised by Pascal Van Hentenryck and Philip Kilby.
- Thesis: "Designing and implementing efficient solutions to large mixed-integer programs using Benders decomposition."

Université de Nantes, Nantes, France
Université Libre de Bruxelles, Bruxelles, Belgium
Masters degree in Operations Research — 2014
Double degree in Maths and Computer Science — 2012

Selected publications

Mahéo, A., Zhao, S., Hassan, A., Harabor, D., Stuckey, P., & Wallace, M. (2021). Customised shortest paths using a distributed reverse oracle. In *The 14th Annual Symposium on Combinatorial Search (SoCS 2021)*.

Mahéo, A., Rossit, D., & Kilby, P. (2020). A Benders decomposition approach for an integrated bin allocation and vehicle routing problem in municipal waste management. In *ICPR Americas 2020 [Best Paper Award]*.

Mahéo, A., Kilby, P., & Van Hentenryck, P. (2019). Benders decomposition for the design of a hub and shuttle public transit system. *Transportation Science*, *53*(1), 77–88. DOI: 10.1287/trsc.2017.0756

Programming skills

Open source projects

- BranDec:[1] a framework for Benders with integer sub-problems.
- Local TSP:[2] local search heuristics for the TSP in Python, along with a reader.[3]
- warthog:[4] high-performance pathfinding library.

1. https://gitlab.com/Soha/brandec
2. https://gitlab.com/Soha/local-tsp
3. https://gitlab.com/Soha/tsplib-reader
4. https://bitbucket.org/dharabor/pathfinding/src/cpd-search/

Working knowledge, Python, PHP, C++
Advanced knowledge, Haskell, C, Bash
Conversant in most programming paradigms.
Linear solver APIs, Gurobi, CPLEX

Supervision

Monash University, Faculty of IT

Eric Shi, Master, with Daniel Harabor 2020–

- Pathfinding with obstacle avoidance in a dynamic environment.

Tong Tong, Master, with Mark Wallace 2020–

- Modelling and optimising user mode choice in Melbourne.

Nelson Frew, Honours, with Pierre Le Bodic 2018

- Thesis: "Implicit enumeration with dual bounds from approximation algorithms."

Teaching experience

Head Tutor, manage course content and tutors

Declarative Programming (COMP90048), University of Melbourne 2019
Programming Paradigms (FIT2102), Monash 2017–

- Write tutorials and assignments in Haskell.
- Maintain the submission server.
- Mentor first-time tutors.

Tutor, deliver course content

Optimisation and Decision Making, Melbourne Business School 2019
Introduction to Programming and Algorithms (COMP1100), ANU 2015, 2016

Work experience

Aziluth, France 2011–2014

Project leader Battle Arenas[5]

- Browser-based strategy and management game with over 1,500 players daily. In-house engine written in PHP with over 90,000 LOC.

De la Plume à l'Écran, France 2008–2016

Webmaster

- Design and maintain a publishing website[6] for an NGO promoting Native American cinema.

Languages

French, mother tongue; English, fluent; Spanish, basic.

5. http://www.battle-arenas.net/
6. https://delaplumealecran.org/