TOMMASO MANNELLI MAZZOLI

Ph. D. in Computer Science

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Ph.D. in Computer Science at TU Wien, working on metaheuristics and hybrid methods for combinatorial oprimisation problems. My research focuses on designing robust metaheuristics and exact-model hybrids (LNS, CMSA, Tabu Search, …) and on rigorous algorithm evaluation. I develop production-oriented implementations in Python and use Gurobi / CPLEX / SCIP for benchmarking and deployment.

I thrive in collaborative environments where people from different background share their skills and knowledge and unitedly use them to obtain a high-quality result.

CURRENT POSITION

PhD Student

TU Wien

2021 – Sept 2025 Vienna, Austria

- Developed and investigated a variety of algorithms designed to solve real-world like optimisation problems. Among them, I can cite Large Neighbourhood Search (LNS), Construction, Merge, Solve & Adapt (CMSA), Tabu Serach, Simulated Annealing, and many others.
- Designed and implemented MIP and MIQP models and solved them with exact solvers such as Gurobi, CPLEX, SCIP, and scipy.optimize. In particular, I have extensively used the most recent version of Gurobi to solve Mixed Integer Programming and Mixed Quadratic Integer Programming problems.
- Developed new instances of optimisation problems based on synthetic and realistic data. For example, I developed instances of the Bus Driver Scheduling Problem by fetching bus timetabling data from open source websites such as Transitfeeds and Mobility Database.
- Fair comparison of algorithms using advanced techniques as Instance Space Analysis to express the strengths and weaknesses of the algorithms.
- Investigated the topic of Clustering of Time Series. The goal is to understand how difficult a bus network of a city is, analysing its bus stops and how the bus lines behave.
- Participated in rigorous peer review process for academic journals, to ensure the pertinence and quality of published scientific work. This also helped me update my knowledge and broaden my perspective of the field.

TALK

Solving the Bus Driver Scheduling Problem

https://youtu.be/XV4CmmHTjkQ?si=cChMfOxuI5T15Vep

University of Melbourne

EDUCATION

Ph.D. in Computer Science

TU Wien

2021 – 2025

Thesis title: Hybrid Methods for the Bus Driver Scheduling Problem

M.Sc. in Mathematical Engineering

Universidad Complutense de Madrid

2019 – 2020

M.Sc. in Applied Mathematics

Universitá degli studi di Firenze

2018 – 2020

B.Sc. in Mathematics

Universitá degli studi di Firenze

2013 – 2018

SKILLS

Modelling | Algorithm development | Proper algorithm comparison

Pandas | Matplotlib | Scipy | Gurobi | Matlab | LaTeX

LANGUAGES

Italian ●●●●●

English ●●●●●

Spanish ●●●●●

German ●●◐○○