

# 20th Symposium on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems

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Conference)

Edited by

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## ■ Preface

Running and optimizing transportation systems give rise to very complex and large-scale optimization problems requiring innovative solution techniques and ideas from mathematical optimization, theoretical computer science, and operations research. Since 2000, the series of Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS) symposia brings together researchers and practitioners who are interested in all aspects of algorithmic methods and models for transportation optimization and provides a forum for the exchange and dissemination of new ideas and techniques. The scope of ATMOS comprises all modes of transportation.

The 20th ATMOS symposium (ATMOS 2020) was held virtually in connection with ALGO 2020 and hosted by University of Pisa, Italy, on September 7-9 2020. Topics of interest were all optimization problems for passenger and freight transport, including, but not limited to, Congestion Modelling and Reduction, Crew and Duty Scheduling, Demand Forecasting, Delay Management, Design of Pricing Systems, Electro Mobility, Infrastructure Planning, Intelligent Transportation Systems, Models for User Behaviour, Line Planning, Mobile Applications for Transport, Mobility-as-a-Service, Multi-modal Transport Optimization, Routing and Platform Assignment, Route Planning in Road and Public Transit Networks, Rostering, Timetable Generation, Tourist Tour Planning, Traffic Guidance, and Vehicle Scheduling. Of particular interest were papers applying and advancing a broad range of techniques including, but not limited to, Algorithmic Game Theory, Approximation Algorithms, Combinatorial Optimization, Graph and Network Algorithms, Heuristics and Meta-heuristics, Mathematical Programming, Methods for the Integration of Planning Stages, Online and Real-time Algorithms, Simulation Tools, Stochastic and Robust Optimization.

All submissions were reviewed by at least three members of the program committee, and judged on originality, technical quality, and relevance to the topics of the symposium. Based on the reviews, the program committee selected seventeen submissions to be presented at the symposium, which are collected in this volume. Together, they quite impressively demonstrate the range of applicability of algorithmic optimization to transportation problems in a wide sense.

ATMOS 2020 had Martin Savelsbergh (Georgia Tech, USA) as a plenary ALGO 2020 speaker who gave a talk on *Algorithms for Large-Scale Service Network Design and Operations*. In addition, Thomas Horstmannshoff (University of Magdeburg, Germany) kindly agreed to complement the ATMOS 2020 program with an invited talk on *Considering Multiple Preferences in Searching Multimodal Travel Itineraries*.

The ATMOS 2020 Best Paper Award was given to Niels Lindner and Christian Liebchen for their paper *Determining All Integer Vertices of the PESP Polytope by Flipping Arcs*.

We would like to thank the members of the ATMOS Steering Committee for guidance, all authors who submitted papers, Martin Savelsbergh for accepting our invitation to be a plenary speaker, the members of the Program Committee and the additional reviewers for their valuable work in selecting the papers appearing in this volume, as well as Roberto Grossi (Chair of the ALGO 2020 Organizing Committee) and his team for hosting the symposium as part of ALGO 2020. We also acknowledge the use of the EasyChair system for the great help in managing the submission and review processes, and Schloss Dagstuhl for publishing the proceedings of ATMOS 2020 in its OASICS series.

August 2020

Dennis Huisman and Christos Zaroliagis

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