22nd Symposium on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems

ATMOS 2022, September 8–9, 2022, Potsdam, Germany

Edited by

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Preface

Designing, deploying and managing effectively modern transportation systems require careful mathematical modeling and give rise to a corresponding wide set of complex, and possibly large-scale, optimization problems. Tackling such problems necessitates, from a computational viewpoint, the definition of innovative, scalable solution techniques and the continuos search for new ideas from mathematical optimization, theoretical computer science, algorithmics, and operations research. Since the 2000s, the series of Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS) workshops, now symposia, represents a well established series of meetings that brings together researchers and practitioners who are interested in all aspects of algorithmic methods and models for transportation optimization, providing a forum for the exchange and dissemination of new ideas and techniques to handle all modes of transportation.

The 22th Symposium on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS 2022) has been held, as usual, as part of ALGO 2022, the major annual european event for researchers, students and practitioners in algorithms, hosted by University of Potsdam and it Hasso Plattner Institute in Potsdam, Germany, on September 8-9, 2022. Topics of interest were all optimization problems, models and algorithmic techniques related to transportation systems including, but not limited to, congestion modelling and reduction, crew and duty scheduling, demand forecasting, delay management, design of pricing systems, electromobility, infrastructure planning, intelligent transportation systems, models for user behaviour, line planning, mobile applications for transport, mobility-as-a-service, multi-modal transport optimization, routing, platform assignment, route planning in road and public transit networks, rostering, timetable generation, tourist tour planning, traffic guidance, vehicle scheduling. Of particular interest were papers applying and advancing the following techniques: algorithmic game theory, algorithm engineering, approximation algorithms, combinatorial optimization, graph and network algorithms, heuristics and metaheuristics, mathematical programming, methods for the integration of planning stages, online algorithms, simulation tools, stochastic and robust optimization.

We received in total 23 submissions from all over the world, 21 of them being regular submissions, the other 2 being of short paper type. All manuscripts were reviewed by at least three PC members, and evaluated on originality, technical quality, and relevance to the topics of the symposium: the unanimous impression was the excellent quality of the 14 papers that have been eventually accepted for publication and that appear in this volume (12 regular papers, 2 short papers). Together, they quite remarkably demonstrate the wide applicability of algorithmic optimization to transportation problems. In addition, Christian Sommer kindly agreed to complement the program with an invited talk titled "On Map Matching GPS Traces" that was presented as a global keynote talk of ALGO 2022.

We would like to thank the members of the Steering Committee of ATMOS for giving us the opportunity to serve as Program Chairs of ATMOS 2022, all the authors who submitted papers, the members of the Program Committee and the additional reviewers for their valuable work in selecting the papers appearing in this volume, Christian Sommer for accepting our invitation to present an invited talk, as well as Tobias Friedrich (Chair of the ALGO 2022 Organizing Committee) and his team at Hasso Plattner Institute for hosting the symposium as part of ALGO 2022. 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 2022 in its OASIcs series.

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Finally, we are pleased to announce that, based on the program committee's reviews and decisions, authors Enrico Bortoletto, Niels Lindner and Berenike Masing have been awarded this year's "Best Paper Award of ATMOS 2022" with their paper titled "Tropical Neighbourhood Search: A New Heuristic for Periodic Timetabling".

August 2022

Mattia D'Emidio
Niels Lindner

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