18th Workshop on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems

ATMOS 2018, August 23–24, 2018, Helsinki, Finland

Edited by
Ralf Borndörfer
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Game Theory

Vehicle Scheduling

ATMOS'18 Best Paper Award

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) workshops 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 18th ATMOS workshop (ATMOS'18) was held in connection with ALGO'18 and hosted by Aalto University in Helsinki, Finland, on August 23–24, 2018. Topics of interest were all optimization problems for passenger and freight transport, including, but not limited to, demand forecasting, models for user behavior, design of pricing systems, infrastructure planning, multi-modal transport optimization, mobile applications for transport, congestion modelling and reduction, line planning, timetable generation, routing and platform assignment, vehicle scheduling, route planning, crew and duty scheduling, rostering, delay management, routing in road networks, traffic guidance, and electro mobility. Of particular interest were papers applying and advancing techniques like graph and network algorithms, combinatorial optimization, mathematical programming, approximation algorithms, methods for the integration of planning stages, stochastic and robust optimization, online and real-time algorithms, algorithmic game theory, heuristics for real-world instances, and simulation tools.

There were twenty-nine submissions from eighteen countries. All of them were reviewed by at least three referees in ninety-one reviews, among them five external ones, and judged on their originality, technical quality, and relevance to the topics of the workshop. Based on the reviews, the program committee selected sixteen submissions to be presented at the workshop (acceptance rate: 55%), which are collected in this volume in the order in which they were presented. Together, they quite impressively demonstrate the range of applicability of algorithmic optimization to transportation problems in a wide sense. In addition, Dennis Huisman kindly agreed to complement the program with an invited talk on *Railway Disruption Management: State-of-the-Art in Practice and New Research Directions*.

Based on the reviews, Ralf Borndörfer, Marika Karbstein, Christian Liebchen, and Niels Lindner won the Best Paper Award of ATMOS'18 with their paper *A Simple Way to Compute the Number of Vehicles That Are Required to Operate a Periodic Timetable*. In addition, we awarded Tomas Lidén the Best VGI Paper Award of ATMOS'18 for his paper *Reformulations for Integrated Planning of Railway Traffic and Network Maintenance*.

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'18, all the authors who submitted papers, Dennis Huisman for accepting our invitation to present an invited talk, the members of the Program Committee and the additional reviewers for their valuable work in selecting the papers appearing in this volume, our sponsors MODAL, TomTom, and VGIscience for their support of the prizes, and the local organizers for hosting the workshop as part of ALGO'18. We 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'18 in its OASIcs series.

August 2018

Ralf Borndörfer
Sabine Storandt

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