Editorial

Selected papers from the eighth Triennial Symposium on Transportation Analysis (TRISTAN VIII)
Special Issue on Advances in transportation and logistics

This special issue of Transportation Research C on Advances in transportation and logistics is gathering a selection of relevant state-of-the-art contributions in topics covered by the majority of the presentations of the eight version of the prestigious international meeting TRISTAN, the Triennial Symposium on Transportation Analysis. This meeting is an international scientific conference that provides a high quality forum for the presentation of state-art-of-the-art transportation research in the fields of operations research, computer science and, more generally, mathematical methodologies.

The eight version of TRISTAN took place in San Pedro Atacama, Chile (June 9–14, 2013). It brought together 122 transportation research scientists from prestigious universities and research institutes, as well as scientific participants from the private sector and from public agencies, representing all the continents, with the following distribution: 31 from North-America, 31 also from South America, 52 from Europe, 4 from Asia, 3 from Oceania and 1 from Africa. The previous conferences took place in Montréal (Canada, 1991), Capri (Italy, 1994), San Juan (Puerto Rico, 1998), San Miguel (Azores Islands, 2001), Le Gosier (Guadeloupe, 2004), Phuket (Thailand, 2007) and Trømso (Norway, 2010).

The high standards of the conference are ensured by a wide and competent scientific committee and by a selective review process. Selected papers based on the extended abstracts published in the Proceedings of the Conference, entered in a throughout and very strict revision process to maintain a tradition of high-standard special issues associated with this Conference. In this issue we received 25 submissions, 10 of which were finally accepted during a period of almost three years of hard work to end up with a high-quality issue covering different topics related to state-of-the-art advances in several transportation fields. The contributions include different vehicle routing problems (rich VRP, green VRP and a ship routing-scheduling), hub location, game theory for public transport crowding analysis, cooperative logistics, railways (cost-benefit analysis for rail traffic management, decision tool for train routing and scheduling), predictive control of automatic guided vehicles and a stochastic network equilibrium approach. Next, we briefly describe each paper included in the issue.

Mancini formalizes a rich vehicle routing problem denoted as multi depot multi period vehicle routing problem with heterogeneous fleet, in terms capacity, features and hourly cost. A limit in route duration is also considered, and the final goal is to minimize delivery costs. A MIP formulation of the problem is proposed, solved through an Adaptive Large Neighborhood Search based Metaheuristics approach.

Montoya et al. (2016) propose a two phase heuristic for the green vehicle routing problem, an extension of VRP in which routes are performed using alternative fuel vehicles. This type of vehicle has limited tank capacity, so routes may visit alternative fuel stations on-route. Even though the proposed heuristic looks like a simple idea, it gives competitive results compared to state-of-the-art methods.

Bakkehaug et al. (2016) consider a ship routing and scheduling problem where the voyages on the same trade must be evenly spread ensuring regular sailing. These conditions imply that the schedule of each ship must be synchronized with those of the others. The authors propose an adaptive large neighborhood search heuristic that yields good quality solutions within relatively short computation times.

Puerto et al. (2016) extend the Single Allocation Ordered Median Hub Location problem to the case of adding capacity constraints, obtaining a better knowledge and several ways to solve it. The paper combines the key elements in location analysis, namely hub facilities, capacities and ordered median objectives, proposing an IP formulation, addressed through an efficient cut and branch approach to solve the problem.

Bouman et al. (2016) define and implement a simple model based on minority games, a class of games that deals with crowding dynamics, adapted to a public transport setting considering resources and heterogeneous passenger preferences.

Based on simulations experiments the authors show that these models enable the development and analysis of new operator policies to deal with crowded situations.

Horizontal collaboration offers a great opportunity for companies to reduce their distribution costs. (Palhazi Cuervo et al., 2016) analyze the effects of different partner characteristics on the coalition's performance using simulations for coalitions of two partners of different characteristics in the context of periodic vehicle routing problems.

Islam et al. (2016) conduct a cost benefit analysis (CBA) to identify cost effective mitigation techniques for efficient rail freight traffic management in Europe, by 2050. The study suggests that the most cost-efficient interventions are those applied to 'hot axle box and axle rupture' and 'spring and suspension failure'.

Murali et al. (2016) present a decision tool to aid train planners obtain quickly good quality routes and schedules fir short time horizons to better handle the limited track capacity available for train movements. The decision tool is made up of an integer programming (IP)-based capacity management model and a genetic algorithm (GA)-based solution procedure.

Zheng et al. (2016) propose a predictive controller for waterborne AGVs which is able to achieve smooth tracking and energy efficiency with arrival time awareness for transport oriented applications. Timing-aware along-track references are generated by a two-level double integrator scheme. The lower level is embedded in online MPC optimizations for smooth tracking. The higher level solves a mixed-integer quadratic programming problem considering distance-to-go and time-to-go before each MPC optimization.

Nakayama proposes stochastic network equilibrium model whose travel times, flows and demands are stochastic. The model permits to examine network reliability under uncertainty. With this approach, it is also possible to evaluate the effect of providing traffic information of travel times to users; some methods are proposed for evaluating the effect of providing such information.

It has been our pleasure and honor to organize this special issue. We would like to thank the participants of the TRISTAN symposium for submitting high quality papers, and for allowing us to edit this inspiring special issue of Transportation Research Part C. Thank you to Prof. Yafeng Yin, the Editor-in-Chief of Transportation Research Part C, for inviting us as guest editors. And a special thanks to all the reviewers for their rigorous work completed under tight deadlines.

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Guest Editors
Cristián E. Cortés
Department of Civil Engineering, Universidad de Chile, Chile

Pablo A. Rey
Department of Industrial Engineering, Universidad de Chile, Chile

Doris Sáez
Department of Electrical Engineering, Universidad de Chile, Chile