

Special Issue: Highlights from the ITS European Congress in Glasgow (2016)

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This Special Issue of IET Intelligent Transport Systems presents a selection of papers presented at the 11th ITS European Congress in Glasgow in June 2016. The papers reflect some of the latest advances in ITS across a range of topics including technologies to support alternative fuels, automation, traffic control, journey planning and open data.

In their evaluation of the CO₂ emissions pathway from hydrogen production to fuel cell car utilisation Ognissanto *et al.* note that fuel cell electric vehicles (FCEVs) are perceived to be an intelligent transport choice for reducing emissions. They review state-of-the-art FC technologies and model the environmental impact of FCEVs, pure battery EVs and internal combustion engine cars to identify solutions offering the most environmentally friendly way forward.

The role of robust and cost-efficient experimental designs for technical tests of information and communication technology (IT)-based solutions in the automotive sector is explored by Demestichas *et al.* using a case study from the EV sector. They note that vehicles are being transformed into electronic hubs of information, communication, entertainment and other applications. The paper proposes an experimental design process for minimising the number of technical tests required to optimise the performance robustness of an automotive service or product under development.

Contemporary traffic light control systems rely on sensors for detection of traffic which are costly in purchase, installation and maintenance. In their paper on the advantage of cooperative traffic light control algorithms Blokpoel and Niebel focus on emerging cooperative technology which offer an attractive alternative where only one road side unit per intersection is required, instead of several infrastructure sensors per lane. The study presents three algorithms to show how the challenge of achieving the necessary detection rates may be overcome.

Basyoni *et al.* investigate the potential for on-board cellular phones (CPs) to collect real-time traffic data collection in areas with limited traffic surveillance infrastructure. Noting that the formulation of data-driven short-term traffic state prediction models is highly dependent on the characteristics of the data collected they develop four short-term travel speed prediction models for use in the CP-based traffic data environment. The models were tested in MATLAB environment on data from a simulation platform for a corridor in Greater Cairo with encouraging results.

The benefits of open transport data are highlighted by Colpaert *et al.* with reference to a study of multimodal route planners in Flanders. They describe the internal and technological challenges to publishing data from the Department of Transport and Public Works in Flanders for maximum reuse. Whilst the effort needed to reuse existing public datasets remains high the paper shows encouraging evidence of datasets being reused in a legally and syntactically interoperable way.

The final paper by Röhr and Rovigo discusses a public service approach to car-sharing (CS) in mid-sized towns using the example

of Belfort, France. CS is gaining increasing interest as an alternative to private cars. The Belfort bus operator decided to build-up a visible and attractive CS service following a public service idea and integrated into the urban mobility offer, with significantly higher vehicle density and vehicle/inhabitants ratio than in the other French cities. The paper focuses on the design elements of the Belfort CS service as well as first analyses of the encouraging results.

List of papers:

- i. *Evaluation of the CO₂ emissions pathway from hydrogen production to fuel cell car utilisation.* Flora Ognissanto; Torquil Landen; Alan Stevens; Mehmet Emre; Denis Naberezhnykh
- ii. *Robust and cost-efficient experimental design for technical tests of information and communication technology-based solutions in the automotive sector.* Konstantinos Demestichas; Evgenia Adamopoulou; Vasilis Asthenopoulos; Pavlos Kosmidis
- iii. *Advantage of cooperative traffic light control algorithms.* Robbin Blokpoel and Wolfgang Niebel
- iv. *Speed prediction from mobile sensors using cellular phone-based traffic data.* Yarah Basyoni; Hazem M. Abbas; Hoda Talaat; Ibrahim El Dimeery
- v. *Open Transport Data for maximising reuse in multimodal route planners: a study in Flanders.* Pieter Colpaert; Mathias Van Compernelle; Nils Walravens; Peter Mechant; Jan Adriaenssens; Femke Ongenaë; Ruben Verborgh; Erik Mannens
- vi. *Public service approach to car-sharing in mid-sized towns: the example of Belfort (France).* Thomas Röhr and Marc Rovigo

Dr Steve Wright (PhD Transport Engineering) is a Research Fellow in CTR. Following research work in traffic control and network flow modelling, he has more recently been involved in a variety of projects related to the planning, operation and evaluation of flexible and shared transport alternatives to private car use (e.g. Demand Responsive Transport services, taxis including shared taxi services, voluntary car schemes, carpooling). Special interest lies in the application of new and proven techniques to facilitate, and expand the market for, such services. He is currently working on the Mobility for Growth SocialCar project and a MaaS project with the University of Sydney Business School.

Professor John Nelson (PhD Transport Engineering) holds the Sixth Century Chair of Transport Studies in the School of Engineering at the University of Aberdeen and is Director of the Centre for Transport Research (CTR) which he established in 2007. He is also an Honorary Professor at the Institute of Transport and logistics Studies (ITLS), University of Sydney. He is particularly interested in the application and evaluation of new technologies to improve public transport as well as the policy frameworks and regulatory regimes necessary to achieve sustainable transport systems.