Anticipating energy consumption with intelligent vehicles: an introduction

Prof. Sousso Kelouwani, P.Eng., Ph.D., MIEEE
Université du Québec à Trois-Rivières, Trois-Rivières, Qc, Canada

Abstract:

According to the Conference Board of Canada, Automated Vehicles (AV) will be the next disruptive technology with a substantial reduction of annual road fatalities by more than 75%. Besides the obvious advantages of transportation security and goods/person effective mobility, intelligent vehicle gives a unique opportunity to increase the transportation energetic efficiency, specifically for electric/hybrid vehicle. Indeed, sensors involved in the vehicle safety during a motion can be used to modulate efficiently the vehicle dynamic regarding energy consumption. In addition, sensing and communication capabilities can significantly contribute to the vehicle path planning and energy management so that the global energy efficiency is increased. However, several challenges need to be solved in order to unlock this promising technology. This lecture will cover the fundamental aspect of anticipating energy required during a short and along trip with low Carbone footprint vehicle. Recent advances in vehicle dynamics monitoring as well as vehicle/navigation road interaction sensing will be discussed.

About the Distinguished Lecturer:

Sousso Kelouwani received the B.S. and M.Sc.A. degrees in electrical engineering from the Université du Québec à Trois-Rivières (UQTR), Trois-Rivières, QC, Canada, in 2000 and 2002, respectively, and the Ph.D. degree in electrical engineering (automation and systems) from the École Polytechnique de Montréal, Montreal, QC, in 2010. He was a Software Engineer with Cylis 53 Inc. (Trois-Rivières, QC), from 2002 to 2005, and Openwave Inc. (Redwood City, CA, USA) from 2005 to 2006. He was a Scientist with the Hydrogen Research Institute, (UQTR, QC), from 2010 to 2012, where he is currently a Professor with the Department of Mechanical Engineering. His current research interests include fuel cell control and optimization, energy management for hybrid electric vehicle, mobile robotics and intelligent navigation system. He co-authored more than 50 peer-review journal and conference papers and holds three patents. Prof. Kelouwani was a recipient of the Governor General of Canada Gold Medal Award (2002, UQTR) and is a Professional Engineer and a Member of the Ordre des Ingénieurs du Québec, Montreal since 2006.