

Invited Talk

Mobile Service Concepts and Car-drivers related Internet Community Systems for Supporting both a Real-time Road Safety Assessment and a Novel “Dynamic ridesharing”-based Urban Smart Mobility

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Abstract:

Road safety is a still unsolved issue in our modern society. Today, road accidents kill more people than wars. Besides, several major cities are merely asphyxiated by traffic congestion. The socio-economical and environmental costs of these two problems are terrifying. Our society needs safe roads and an efficient mobility in both urban and inter-urban road networks.

This talk presents a series of ideas demonstrating how far novel forms of social networking (Pervasive Social Computing) coupled with both appropriate intelligent systems and the mobile Internet do meet Intelligent Transportation. The pervasive social computing should involve vehicles, smart infrastructures and travellers. Thereby, a very cost-effective and adaptive data and information collection infrastructure does result from this synergetic convergence. A series of interesting mobile service concepts are enabled. A form of real-time road safety support involving amongst others context-aware recommender and assistance systems comes into realistic reach.

Furthermore, novel forms of mobility support should also profit from such a smart infrastructure. Just for illustration, the example of a novel urban mobility concept called “Mobility Ebay” or in short “Mo-Bay” is presented. Mo-Bay is based on the use of intelligent communication and information systems technologies to coordinate mobility needs, mobility demand, goals and actions in real-time through the efficient combination of multiple urban modes of transportation (individual cars, public transportation (bus and trams) and taxis). The concept is particularly human-centred in the sense that any developments are attuned to the needs of the users living in the urban areas and their surroundings.

Curriculum Vitae:

Prof. Dr.-Ing. Kyandoghere Kyamakya obtained his Master of Science degree (in French: “Ingenieur Civil”) in Electrical Engineering at the University of Kinshasa (DR. Congo) in 1990. He then became teaching assistant at the same University for three

years. After that, he became a scholar of the DAAD (German Service for Academic Exchanges) for doctoral studies at the FernUniversität-Hagen in Germany, where he obtained his doctorate degree in Electrical Engineering in October 1999. He then spent three years of postdoc-research at the Hannover University in the field of “Mobility Management in Wireless Networks and Location Based Services”. From October 2002 to October 2005, he occupied a junior-professorship position in the area of “Positioning and Location Based Services in Wireless Networks” at the same university. Finally, since October 2005, he is full professor for “Transportation Informatics” and head of the Department for Smart Systems Technologies at the Alpen-Adria-University of Klagenfurt in Austria.

The research group Transportation Informatics (TIG) headed by Prof. Kyamakya (for more details, see URL: <http://www.uni-klu.ac.at/tewi/ict/sst/tig/index.html>) is one of three research groups of the Institute for Smart Systems Technologies of the University of Klagenfurt. Concerning research, teaching as well as consultancy activities, TIG is mainly involved in modelling, simulation, data analysis, optimization and adaptive control for a set of transportation related complex systems, which are: intelligent traffic systems, intelligent urban mobility systems, supply chain networks, and robust machine vision systems for advanced driver assistance systems.

In the research addressing these systems, a series of both theoretical and practical instruments are either extensively exploited or are source of inspiration for innovative solutions and concepts, namely: nonlinear dynamics and synchronization, coupled oscillators as a modelling paradigm, context-awareness and reasoning under uncertainty, cellular neural networks, nonlinear image processing, digitally emulated analogue computing for real-time computational engineering, systems science and computational intelligence.