

Guest Editorial Preface

Special Issue on Urban Computing and Smart Cities Applications for the Knowledge Society

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VISIONING SMART CITIES RESEARCH: AN INTEGRATED SCIENTIFIC DEBATE

The papers in this urban computing special issue cover a framework and components of crowdsourcing, and a range of issues related to volunteered geographic information, including user behavior, brand popularity, recommendation system, and social analytics in social networks.

Moreover, the special issue is devoted to capture different patterns and dynamics that characterize the big cities in order to reflect understanding of these phenomena and improving the quality of cities. The contributions in this special issue address the generation of urban data, their representation and analysis, and finally their relevance for urban planning and design, as well as the sustainability of smart cities.

This volume is composed of 5 papers, which are intended to describe important challenges related to problems presented in big cities. For instance, in Saldaña *et al.*, a methodology to obtain information related to traffic events such as accidents or congestions, from Twitter messages and RSS services is proposed. This work applies a text mining process on the posted messages to acquire the relevant data, then data are classified by using a machine learning technique. Later, the events are geocoded and transformed into geometric points to be represented on a map. The final repository lets data to be available for further works related to the traffic events on the study area.

At the same time, in Escamilla *et al.*, an approach for geocoding that takes advantage of the spatial relationships contained in the text of tweets, using semantic and spatial analyses is presented. The goal of this work is to associate spatial relationships, that were found in text with a spatial footprint, in order to determine the location of the event described in the tweet. This contribution is oriented towards improving the human ability to understand approximate references to locations, disambiguated by means of context and reasoning about spatial relationships. This approach is an important key to describe spatial environments and share volunteered geographic information.

In Juaréz *et al.*, a general framework for generating and sensing volunteered geographic information related to environmental noise is proposed. In this approach citizens play important roles, as users and map producers. Authors propose a mobile application in order to sense noise. Later, they used support vector machine as a machine learning approach for characterizing the phenomenon and analyzing with an acoustic noise prediction model the spatio-temporal sensed data. The information visualization is presented by means of heat maps that reflect the concentration and distribution of the acoustic noise information in a web-mapping application.

On the other hand, recommender systems with crowdsensing approaches are very and timely useful in this years. Thus, in Guzmán *et al.*, an approach focused on locating and recommending health care centers within a certain range of distance is presented. This approach includes several

integration technologies such as location services, mobile devices, social networks, ontologies, and historical statistics about vehicular traffic.

In addition, Luna *et al.*, proposed an approach to instantly provide additional information to Massive Open Online Courses (MOOC) students about geographic features found in publications at course forums. The results are displayed through in the ORBIS tool, which automatically highlights the geographic entities in the texts. With this tool, the student gets access to additional information in the same environment, without disruption, interacting with maps and spatial relationships with other entities. Information on locations mentioned in text is obtained from queries posted to the gazetteer Linked OntoGazetteer. The prototype is applied to the students' posts in the forum space for the Geo-MOOC titled Maps and the Geospatial Revolution course, offered by the Pennsylvania State University.

In *Navigating News Programs in Large TV-Streams: A Knowledge-Based Approach*, by Walid Mahdi and Tarek Zlitni contribute interesting insights for the customization and personalization of smart content in Smart TVs. The major originality of their approach is the use of contextual and operational characteristics of TV production/post-production rules as prior knowledge that captures the structure and infers grammars for recurrent TV news program content. They also validate their approach by experiments conducted using the TRECVID dataset that demonstrate its robustness.

Finally, Maria Vargas-Vera in *Towards a Data Integration Framework: A Children and Parents Cohort Case Study* presents a proposal for a data integration framework. The purpose of the framework is to locate automatically records of participants from the ALSPAC database (Avon Longitudinal Study of Parents and Children) within its counterpart GPRD database (General Practice Research Database). The ALSPAC is a collection of data from children and parents from before birth to late puberty. This collection contains several variables of interest for clinical researchers but the author is focusing on asthma as a golden standard for evaluation of asthma has been made by a clinical researcher. The main component of the framework is a module called Mapper which locates similar records and performs record linkage. It is a great contribution to the discussion for Smart Medical Services.

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