

Lecture Notes in Intelligent Transportation and Infrastructure

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Mohamed Ben Ahmed ·
Anouar Abdelhakim Boudhir ·
Ali Younes
Editors

Innovations in Smart Cities Applications Edition 2

The Proceedings of the Third International
Conference on Smart City Applications

 Springer

Editors

Mohamed Ben Ahmed
Association Méditerranéenne des Sciences
et Technologies
Tangier, Morocco

Anouar Abdelhakim Boudhir
Association Méditerranéenne des Sciences
et Technologies
Tangier, Morocco

Ali Younes
Faculty of Sciences
Présidence UAE
Tétouan, Morocco

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Preface

A significant research activity has occurred in the area of Smart City in recent years. This field attracted multiple disciplines (Academy, Economy, Industry, Healthcare, Government, Society, Water and Energy...) for the main goal focused on how to improve services and the well-being living of citizens in the cities.

This Book presents a second edition of the “Innovations in Smart Cities and Applications” Book published in 2018. It’s a real continuation in advanced contributions and scientific works done on several axes and subarea of smart city applications and domain, especially on Computer Technologies, Energy management, Logistics, Governance, Policy, Healthcare, Economy and Environment, and more. Those editions, the past one and the future one’s, are considered as an added value in the research for interested in developing the future smart cities. Thanks to participants and researchers who trusted to those series of conferences, this research area will grow and exist due to their high quality of presented papers.

This volume contains selected extended papers of The Third International Conference on Smart City Applications (SCA 2018) held on October 10–11, 2018 in Tetouan, Morocco. It regroups original research results, new ideas, and practical development experiences and includes papers from all areas of Smart City Applications. The scope of SCA 2018 comprises methods and practices that combine various emerging internetworking and data technologies to capture, integrate, analyze, mine, annotate, and visualize data in a meaningful and collaborative manner.

We thank all authors from across the globe for choosing SCA18 to submit their manuscripts. A sincere gratitude to all keynotes speakers for offering their valuable time and sharing their knowledge with the conference attendees. Specials thanks are addressed to all organizing committee members, to all program committee members, and to all chairs of sessions for their efforts and the time spent in order to success this event.

Many thanks to the Springer staff for their support and guidance. In particular, our special thanks to Dr. Thomas Ditzinger and Ms. Varsha Prabakaran for their kind support.

Mohamed Ben Ahmed
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Keynotes



Gilles Betis
OrbiCité, France

Biography: Gilles Betis is the founder of OrbiCité, a consulting company dedicated to Smart Cities, Mobility, Innovation, and Entrepreneurship. He previously held various positions in high-tech international companies, transport services providers, and a European agency dedicated to digital technologies. In 2013, he co-founded the IEEE Smart Cities Initiative and has been chairing it until 2017 during its incubation phase. Since the end of the 80s, he has constantly been involved with prospective, innovation and design of complex systems, as well as entrepreneurship and value creation. Having an extensive industrial experience in Intelligent Transportation Systems and Smart Cities (mobility, data, security and resilience, and civic tech), he always linked up emerging behaviors and societal needs to innovative technological solutions, allowing smooth adoption by final users. Gilles Betis was graduated in 1987 from Ecole Supérieure d'Electricité in France.

MaaS—Mobility as a Service, a New Paradigm Implementation

Abstract: Focusing on the finalities rather than on the means to move people and goods, a new field of solutions is emerging now. Technological standards and business processes are ready, and new business models and new actors are emerging. Those models are not exclusive to developed countries but also have a great interest in developing countries. The lecture will go through:

1. issues and limitations
2. innovation dynamics
3. innovation in transportation technology
4. the transport experience
5. innovation in mobility, open data, and business models
6. political innovation and regulations.



Prof. Dr. İsmail Rakıp Karaşo
Karabuk University, Turkey

Biography: Dr. İsmail Rakıp Karaşo is a Professor of Computer Engineering Department and Head of 3D-GeoInformatics Research Group at Karabuk University, Turkey. He received his B.Sc. degree from Selcuk University, M.Sc. degree from Gebze Institute of Technology, and Ph.D. degree from GIS and Remote Sensing program of Yildiz Technical University, in 1997, 2001, and 2007, respectively, three of them from Geomatics Engineering Department. In 2002, he involved in a GIS project as a Graduate Student Intern at Forest Engineering Department, Oregon State University, USA. During the summer of 2014 and summer of 2010, he was a Visiting Researcher in 3D GIS Research Lab, Faculty of Geoinformation Science and Engineering, Universiti Teknologi Malaysia. Between 2000 and 2009, he was a Research Assistant at Geomatics Engineering Department of Gebze Institute of Technology. Since 2009, he has been in Karabuk University and taught undergraduate and graduate classes in Geoinformation and Computer Sciences. He has also carried out administrative duties such as Head of Computer Science Division of Department, Director of Safranbolu Vocational School of Karabuk University. Currently, he is the Dean of Safranbolu Fine Art and Design Faculty in the same university.

Artificial Intelligence Based Smart Evacuation System Design for the Complex Buildings of Smart Cities

Abstract: In this talk, 3D Network Analyses and Interactive Human Navigation System for indoor which consists of three components will be presented. The first component is used to extract the geometrical and 3D topological vector data automatically from architectural raster floor plans. The second component is used for network analysis and simulations. It generates and presents the optimum path in a 3D modeled building, and provides 3D visualization and simulation. And the third component is used to carry out the generation of the guiding expressions, and it also provides that information for the mobile devices such as PDA's, laptops, etc. via Internet.

In addition, an Intelligent Evacuation Model for Smart Buildings will be introduced in this presentation. The model dynamically takes into account environmental (smoke, fire, etc.) and human-induced (age, disability, etc.) factors and generates personalized evacuation route by performing network analysis interactively and in real time. Intelligent Control Techniques (Feed-Forward Artificial Neural Networks) have been used in the design of the model.



Prof. Dr. Daniyal Alghazzawi
King Abdulaziz University,
Jeddah, Saudi Arabia

Biography: Daniyal Alghazzawi is a Professor in the Computing Information Systems Department and the Head of the Information Security Group at King Abdulaziz University. He received his B.Sc. degree with honor in Computer Science from King Abdulaziz University in 1999. Then, he completed his M.Sc. and Ph.D. degrees in the field of Computer Science at the University of Kansas in the United States in 2007. He also received another M.Sc. degree in Teaching and Leadership from University of Kansas in 2004 which helped him to develop his teaching and leadership skills. This helped him to obtain a certificate in Management International Leadership (LMI). Since 2007, he served as the Head of Department for 5 years, and then he served as a Vice Dean of Development of the Deanship of Information Technology for 2 years. In 2017, he became an Honorary Lecturer at School of Computer Science and Electronic Engineering, at University of Essex in UK.

He organized number of domestic workshops and international conferences. He published more than 100 papers in international journals and conferences in the field of Smart e-Learning, Information Security, and Computational Intelligent. He is the Project Manager for two international collaborations in King Abdulaziz University, which are Smart Building with University of Essex and Multi-Agent Systems with University of Southampton. He served as a reviewer and an editor for international conferences, journals, workshops, and contests.

Smart Blockchain Model for IoT Security Challenges in Smart Cities

Abstract: Smart cities are the nearest future for most countries around the world, which involve growth in the Internet of Things devices. There are 34.8 billion IoT devices connected in 2018, and it is predicted to exceed 50.1 billion IoT devices by 2020. Based on Forrester's analysis, number of IoT Security Challenges are illustrated, such as IoT Encryption, IoT Authentication, IoT PKI, IoT Security Analytics, IoT Network Security, and IoT API Security. The world has already faced one of the biggest securities hijacked on more than 1 million IoT devices in October 2016 using Mirai Botnets. Therefore, a proposed model will be introduced to solve the most IoT Security Challenges using Blockchain and AI techniques.



Prof. Mohammed Bouhorma
Abdelmalek Essaadi
University, Tangier, Morocco

Biography: Mohammed Bouhorma is a Professor in the Department of Computer Science, Abdelmalek Essaadi University, where he has been since 1996. He received his Ph.D. degree in Communication Systems from the Polytechnic Institute of Toulouse, France in 1995. From 2006 to 2009, he served as Department Chair. He is responsible of the Master in Computer Sciences and Systems (Since 2006). He was a Visiting Professor at the Laboratoire d'Informatique d'Avignon (France) and IEMN-Lille France. He was Head (and founder) of the Computer and Communication Systems Laboratory from 2013 to 2017.

He has been the supervisor of more than 20 Ph.D. students, and he has published more than 100 peer-reviewed publications. His research interests include computer security, wireless sensors network, cybersecurity, and serious games.

He has also served as a general chair, technical program chair, technical program committee member, organizing committee member, session chair, and reviewer for many international conferences and workshops. His research has been supported by several agencies.

The Role of Big Data and IoT in Smart City

Abstract: The expansion of big data and rapid advances in artificial intelligence (AI) and machine learning have played an important role in the feasibility of smart city initiatives. The evolution of Internet of Things (IoT) technologies and a combination of the IoT and big data is an unexplored research area that has brought new and interesting challenges for achieving the goal of future smart cities. Intelligent transportation systems based on vehicular ad-hoc network (VANET) communications will improve many services, expressively, related to transport, security, reliability, and management, including the assistance in the reduction of traffic congestion.

In this talk, we will present some recent research works in the smart city fields:

- Leveraging Smartphone Sensors to Detect Distracted Driving Activities
- IoT for ITS: A Dynamic Traffic Lights Control based on the Kerner Three Phase Traffic Theory
- ACO and PSO Algorithms for Developing a New Communication Model for VANET Applications in Smart Cities
- Smart Citizen Sensing: A Proposed Computational. System with Visual Sentiment Analysis and Big Data.

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