Lecture Notes in Computer Science 11253

Editorial Board

More information about this series at http://www.springer.com/series/7409

Andrzej M. J. Skulimowski · Zhengguo Sheng
Sondès Khemiri-Kallel · Christophe Cérin
Ching-Hsien Hsu (Eds.)

Internet of Vehicles

Technologies and Services Towards Smart City

5th International Conference, IOV 2018
Paris, France, November 20–22, 2018
Proceedings

🦄 Springer

Editors
Andrzej M. J. Skulimowski ⓘD
AGH University of Science and Technology
Krakow, Poland

Christophe Cérin
Université Paris 13
Villetaneuse, France

Zhengguo Sheng
University of Sussex
Brighton, UK

Ching-Hsien Hsu
National Chung Cheng University
Minxiong, Taiwan

Sondès Khemiri-Kallel
Université de Versailles St Quentin
Versailles, France

Preface

As the era of Internet of Things is arriving, the Internet of Vehicles (IOV) plays an important role for constructing smart cities as well as for establishing smart industrial environments according to the Industry 4.0 paradigm. Smart cities are complex integrated network systems, which connect different people within automotives, different automotives, and different environmental objects in cities. In the industrial environments, IOV focuses on providing new efficient solutions with digital intervehicular data transfer and overall communications. Yet, IOV is different from telematics, vehicle ad hoc networks, and intelligent transportation, in which vehicles like phones can run within the whole network, and obtain various services by swarm intelligent computing with people, vehicles, and environments.

This volume contains the proceedings of the 5th International Conference on Internet of Vehicles (IOV 2018), which was held in Paris, France during November 20–22, 2018. We accepted for publication a total of 21 high-quality papers selected from 41 submissions. The articles in this volume are grouped in 4 Parts, namely "IoV communications and networking" (5 papers), "IoV clouds and services" (6 papers), "Vehicular modelling and simulation" (5 papers), and "Vehicular security and privacy" (5 papers). The above Part titles correspond to the research areas traditionally covered by the IOV conference series. Like all previous conferences in this series, IOV 2018 was intended to play an important role for researchers and industry practitioners to exchange information regarding advancements in the state of art and practice of IOV architectures, protocols, services, and applications. It was also intended to identify emerging research topics and define the future directions of IOV and its related areas such as Internet-supported autonomous driving. We believe that this volume not only presents novel and interesting ideas but also will stimulate interesting discussions from the participants and inspire new ideas that will be submitted and presented at further conferences in this series.

The organization of conferences is hard work. This conference would not have been possible without the exceptional commitment of many expert volunteers. We would like to take this opportunity to extend our sincere thanks to all the authors, keynote speakers, Technical Program Committee members, and reviewers. Special thanks go to the entire local arrangements committee for their help in making this conference a success. We would also like to express our gratitude to all the organizations that supported our efforts to bring the conference to fruition. We are grateful to Springer for publishing the underlying proceedings.

Last, but not least, we hope that the participants not only enjoyed the technical program during this prestigious conference but also discovered many historical

attractions in Paris, to make their stay unforgettable. Thanking you for your participation in this fruitful and enjoyable IOV 2018 Conference!

November 2018
                                        Andrzej M. J. Skulimowski
                                                    Zhengguo Sheng
                                              Sondès Khemiri-Kallel
                                                  Christophe Cérin
                                                  Ching-Hsien Hsu

Organization

General Chair

Mohamed-Cherif Rahal   VeDeCom, France

General Executive Chair

Christophe Cérin   Université Paris 13, France

Program Chairs

Andrzej M. J. Skulimowski   AGH University of Science and Technology, Poland
Zhengguo Sheng   The University of Sussex, UK

Publication Chair

Sondes Khemiri-Kallel   Université Versailles St Quentin, France

International Liaison and Publicity Chairs

Naercio Magaia   University of Sussex, UK
Benoît Parrein   Université de Nantes (Polytech Nantes), France

Steering Committee

Mohammed Atiquzzaman   University of Oklahoma, USA
Jiannong Cao   Hong Kong Polytechnic University, China
Ching-Hsien Hsu   Chung Hua University, Taiwan
Victor C. Leung   The University of British Columbia, Canada
Shangguang Wang   Beijing University of Posts and Telecommunications, China
Philip Yu   University of Illinois at Chicago, USA

Technical Program Committee

Witold Byrski   AGH University of Science and Technology, Poland
Carlos Calafate   Universitat Politècnica de València, Spain
Christophe Cerin   University of Paris XIII, France
Yao-Chung Chang   National Taiwan Technical University, Taiwan
Jyh-Biau Chang   National Taitung University, Taiwan
Rachid Chelouah   EISTI, France
Min-Xiou Chen   National Dong Hwa University, Taiwan

Thomas Chen	City University, UK
Zhe Chen	Northeastern University, China
Tzung-Shi Chen	National University of Tainan, Taiwan
Woong Cho	Jungwon University, Korea
Domenico Ciuonzo	University of Naples Federico II, Italy
François-Xavier Coudoux	IEMN DOAE UVHC, France
Jana Dittmann	University of Magdeburg, Germany
Oscar Esparza	Universitat Politècnica de Catalunya, Spain
Ching-Hsien Hsu	Chung Hua University, Taiwan
Esa Hyytiä	University of Iceland, Iceland
Nanlin Jin	Northumbria University, UK
Arnaud Kaiser	IRT SystemX, France
Georgios Kambourakis	University of the Aegean, Greece
Sokratis Katsikas	Center for Cyber and Information Security, NTNU, Norway
Sondes Khemiri-Kallel	UVSQ, France
Donghyun Kim	Kennesaw State University, USA
Youngwook Ko	Queen's University Belfast, UK
Dimitrios Koukopoulos	University of Western Greece, Greece
Shujun Li	University of Kent, UK
Shou-Chih Lo	CSIE, National Dong Hwa University, Taiwan
Anthony Lo	Nokia Bell Labs, France
Miguel López-Benítez	University of Liverpool, UK
Xavier Masip	Universitat Politècnica de Catalunya, Spain
Nikolaos Papandreou	IBM, Switzerland
Benoît Parrein	Polytech Nantes, France
Christian Prehofer	Technical University of Munich, Germany
Luca Reggiani	Politecnico di Milano, Italy
Alexandre Santos	University of Minho, Portugal
Zhengguo Sheng	University of Sussex, UK
Adão Silva	University of Aveiro, Portugal
Andrzej M. J. Skulimowski	AGH University of Science and Technology, Poland
Ignacio Soto	UC3M, Spain
Razvan Stanica	INSA, France
Hung-Min Sun	National Tsing Hua University, Taiwan
Ryszard Tadeusiewicz	AGH University of Science and Technology, Poland
Momin Uppal	LUMS School of Science and Engineering, Pakistan
Giacomo Verticale	Politecnico di Milano, Italy
Jenq-Haur Wang	National Taipei University of Technology, Taiwan
Xiaofei Wang	Tianjin University, China
You-Chiun Wang	National Sun Yat-Sen University, Taiwan
Bernd Wolfinger	University of Hamburg, Germany

Additional Reviewers

Ferheen Ayaz	The University of Sussex, UK
Bastien Confais	CNRS, Polytech Nantes, France
Martin Lopez-Nores	University of Vigo, Spain
Andreas Pressas	The University of Sussex, UK
Przemyslaw Pukocz	AGH University of Science and Technology, Poland
Jianshan Zhou	Beihang University (BUAA), China

Contents

Vehicular Modelling and Simulation

Vehicular Security and Privacy