

IEEE Transactions on Intelligent Transportation Systems

Call For Papers

Special Issue on Software Defined Internet of Vehicles

MOTIVATION AND SCOPE

Internet of Vehicles (IoV) is a large interactive network composed of information such as vehicle location, speed and route. Vehicles can collect their own environment and state information through GPS, RFID, sensors, camera image processing, and other devices. They can transmit their various information to the central processing unit through Internet technology. These large amounts of vehicle information can be analyzed and processed through computer technology to calculate the optimal route for different vehicles, and report road conditions in time and schedule signal light cycles. Internet of Vehicles (IoV) is a large-scale system network for wireless communication and information exchange between vehicles and people, vehicles and roads, vehicles and the Internet, which is based on intra-vehicle network, inter-vehicle network and vehicle mobile Internet, in accordance with the agreed communication protocols and data interaction standards. The system realizes the integrated network of intelligent traffic management, intelligent dynamic information service, and intelligent vehicle control by "filtering and cleaning" massive data and processing data on the platform. Internet of Vehicles (IoV) system utilizes advanced IoT technology, cloud computing, and big data to make the system fully aware of roads and traffic. It enables all vehicles to collect information through their own environment and state, and upload all kinds of information to the Internet big data platform. The central processing unit collects, analyzes, and processes a large amount of uploaded information. The system will control every vehicle involved in the traffic and control every road in real time to provide users with traffic efficiency and safety.

SDN can provide a feasible, cost-effective way to manage IoV and ensure network security.

What's more, it can furthest improve the application programs and analyze performance. Due to the explosive growth of IoV and the chaotic nature of the public Internet, traffic in this area needs to be migrated to private channels; otherwise, there will be delays in key communications services and applications. Service providers and their users can transmit traffic of key services through these private channels, and transport the less important traffic through the public Internet. This requires the ability of SDN technology to respond to all kinds of requests.

SDN enables the network to be automatically and intensively managed, which can be achieved through remote configuration and management. The time to manage data center switches and USB device profiles by manpower have passed, IoV requires providers to rapidly configure devices around the world. That's why centralized management points will be essential components of the solution.

From a centralized point, automated protocols which allow macro-management of data traffic can be created. Augmented reality, advertising, threat evaluation, and mitigation, even navigation, all these require dynamic response from network devices. Through SDN, people can set up the

strategy of new devices to access IoV in advance, which basically enables users to predict and then respond to IoV access devices. The inherent scalability of SDN enables new IoV devices to be added quickly. Programming the response protocols for these new network devices means that the network can expand (or shrink) as needed, and the dynamic response system greatly reduces the risk of IoV.

The virtualization of SDN components enables dynamic reconfiguration of network devices and traffic, automatic bandwidth configuration, and bandwidth de-configuration. Therefore, with the growth of IoV traffic, high-traffic instantaneous bandwidth or traffic related to health and safety applications will be given priority. The global IoV nature means the influx of large amounts of data, but the analysis of this information will lead to more intelligent and automated predictions. If the devices know each other better, traffic issues can be solved automatically without relying on well-planned solutions.

This special issue calls for high quality and up-to-date technology related to IOV and SDN and serves as a forum for researchers all over the world to discuss their works and recent advancements in the field. In particular, the special issue is going to showcase the most recent progress and development in IOV research and exploration. Both theoretical studies and state-of-the-art practical applications are welcome for submission. All the submitted papers will be peer-reviewed and selected on the basis of their quality and relevance to the theme of this special issue.

LIST OF TOPICS: Topics of interest to this special issue include, but are not limited to:

1. Smart Electric Vehicle Charging with Information-Centric Networking
2. The Content Management Layer of IoV for Software-Defined Information Centric Networks
3. Natural Design for Social Network Applications of IoV
4. Optimization of charging infrastructure usage under varying traffic and capacity conditions
5. Method for network coding packets in content-centric networking based networks
6. A natural design for social network applications of IoV
7. Versatile deployment framework for information-centric networks
8. System for providing information-centric networking services of IoV
9. Measurement technology for software-defined networking of IoV
10. Measurement technology for information-centric networking of IoV
11. Simulation and emulation of network measurement approaches of IoV
12. Inference theory and technology network measurement of IoV
13. IoV tomography for software-defined networking
14. IoV tomography for information-centric networking

PAPER SUBMISSION GUIDELINES

Paper submission should conform to the information for authors available at

<https://mc.manuscriptcentral.com/t-its>.

IMPORTANT DATES

First submission deadline: March 30 2020

Notification of first decision: June 30 2020

First revision submission deadline: August 30, 2020

Notification of final decision: December 30, 2020.

Final manuscript (camera ready) submission deadline: January 30 2021

Issue of Publication: March 30 2021

GUEST EDITORS

List all Guest Editors that will be involved in the review process of the SI. Please insure all guest editors have an existing account in Manuscript Central. The Editorial Administrator will grant Editor rights.

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Short bios for each editor – keep this section separate from the editor listing above. Bio section should include years of experience post PhD

Zhihan Lv – Zhihan Lv is currently a Professor of Qingdao University, China. He was Research Associate at University College London (UCL). He received his PhD from Paris7 University and Ocean University of China in 2012. He worked in CNRS (France) as Research Engineer, Umea University/ KTH Royal Institute of Technology (Sweden) as Postdoc Research Fellow, Fundacion FIVAN (Spain) as Experienced Researcher. He was a Marie Curie Fellow in European Union's Seventh Framework Program LANPERCEPT. His research mainly focuses on Multimedia, Augmented Reality, Virtual Reality, Computer Vision, 3D Visualization & Graphics, Serious Game, HCI, Big data, and GIS. He has contributed 200+ papers in the related fields on journals such as IEEE TII, ACM TOMM, and conference such as ACM MM, ACM CHI, ACM Siggraph, ICCV, IEEE Virtual Reality.

He is the guest editors for IEEE Transactions on Industrial Informatics, Future Generation Computer Systems, Neurocomputing, Neural Computing and Applications, Computers & Electrical Engineering, IET Image Processing, Multimedia Tools and Applications, Journal of Intelligent and Fuzzy Systems. He is Program Committee member of ACM IUI 2015 & 2016 & 2019, IEEE BIGDATA4HEALTH Workshop 2016, IEEE/CIC WIN Workshop 2016, IIKI2016, WASA2016, IEEE PDGC2016, and ACM SAC2017-WCN Track. He has also served as a reviewer for journals such as IEEE Transaction on Multimedia, IEEE Multimedia, Neurocomputing, Elsevier Computer Networks, Springer Telecommunication Systems, Multimedia Tools and Applications, KSII Transactions on Internet and Information Systems, Journal of Medical Internet Research,

Intelligent Service Robotics, PRESENCE: Tele-operators and Virtual Environments, and conference e.g. ACM MUM 2013, ACM CHI 2014 & 2015, ACM DIS 2014 & 2016, IEEE Info-Vis 2014, ACM UIST 2014& 2016, ACM Mobile-HCI 2014 & 2015& 2016, ACM CHIPLAY 2014 & 2015& 2016, ACM CSCW 2015& 2016, ACM SUI 2014& 2015, ACM ITS 2014 & 2015, IEEE VAST 2014, IEEE VR 2015 & 2016, ACM IUI 2015 & 2016, IEEE 3DUI 2015 & 2016, ACM TVX 2015, IEEE Euro-Vis 2015 & 2016, ACM Creativity & Cognition 2015, ACM EICS 2015, ACM IDC 2015 & 2016, IEEE ICSIPA 2015, GI 2016, IEEE ITSC 2016, IEEE Sensors 2016, ACM ACI 2016, ACM VRST 2016, and ACM ISS 2016.

Jaime Lloret – Prof. Jaime Lloret (jlloret@dcom.upv.es) received his B.Sc.+M.Sc. in Physics in 1997, his B.Sc.+M.Sc. in electronic Engineering in 2003 and his Ph.D. in telecommunication engineering (Dr. Ing.) in 2006. He is a Cisco Certified Network Professional Instructor. He worked as a network designer and administrator in several enterprises. He is currently Associate Professor in the Polytechnic University of Valencia. He is the Chair of the Integrated Management Coastal Research Institute (IGIC) and he is the head of the "Active and collaborative techniques and use of technologic resources in the education (EITACURTE)" Innovation Group. He is the director of the University Diploma "Redes y Comunicaciones de Ordenadores" and he has been the director of the University Master "Digital Post Production" for the term 2012-2016. He was Vice-chair for the Europe/Africa Region of Cognitive Networks Technical Committee (IEEE Communications Society) for the term 2010-2012 and Vice-chair of the Internet Technical Committee (IEEE Communications Society and Internet society) for the term 2011-2013. He has been Internet Technical Committee chair (IEEE Communications Society and Internet society) for the term 2013-2015. He has authored 22 book chapters and has more than 450 research papers published in national and international conferences, international journals (more than 200 with ISI Thomson JCR). He has been the co-editor of 40 conference proceedings and guest editor of several international books and journals. He is editor-in-chief of the "Ad Hoc and Sensor Wireless Networks" (with ISI Thomson Impact Factor), the international journal "Networks Protocols and Algorithms", and the International Journal of Multimedia Communications. Moreover, he is Associate Editor-in-Chief of "Sensors" in the Section sensor Networks, he is advisory board member of the "International Journal of Distributed Sensor Networks" (both with ISI Thomson Impact factor), and he is IARIA Journals Board Chair (8 Journals). Moreover, he is (or has been) associate editor of 46 international journals (16 of them with ISI Thomson Impact Factor). He has been involved in more than 450 Program committees of international conferences, and more than 150 organization and steering committees. He has led many local, regional, national and European projects. He is currently the chair of the Working Group of the Standard IEEE 1907.1. He has been general chair (or co-chair) of 40 International workshops and conferences (chairman of SENSORCOMM 2007, UBICOMM 2008, ICNS 2009, ICWMC 2010, eKNOW 2012, SERVICE COMPUTATION 2013, COGNITIVE 2013, ADAPTIVE 2013, 12th AICT 2016, 11th ICIMP 2016, 3rd GREENETS 2016, 13th IWCMC 2017, 10th WMNC 2017 and co-chairman of ICAS 2009, INTERNET 2010, MARSS 2011, IEEE MASS 2011, SCPA 2011, ICDS 2012, 2nd IEEE SCPA 2012, GreeNets 2012, 3rd IEEE SCPA 2013, SSPA 2013, AdHocNow 2014, MARSS 2014, SSPA 2014, IEEE CCAN 2015, 4th IEEE SCPA 2015, IEEE SCAN 2015, ICACCI 2015, SDRANCAN 2015, FMEC 2016, 2nd FMEC 2017, 5th SCPA 2017, JITEL 2017, SDS 2018 and IoTSMS 2018, and local chair of MIC-WCMC 2013 and IEEE Sensors 2014). He is IEEE Senior, ACM Senior and IARIA Fellow.

Houbing Song – Houbing Song (M'12–SM'14) received the Ph.D. degree in electrical engineering from the University of Virginia, Charlottesville, VA, in August 2012, and the M.S. degree in civil engineering from the University of Texas, El Paso, TX, in December 2006.

In August 2017, he joined the Department of Electrical, Computer, Software, and Systems Engineering, Embry-Riddle Aeronautical University, Daytona Beach, FL, where he is currently an Assistant Professor and the Director of the Security and Optimization for Networked Globe Laboratory (SONG Lab, www.SONGLab.us). He served on the faculty of West Virginia University from August 2012 to August 2017. In 2007 he was an Engineering Research Associate with the Texas A&M Transportation Institute. He serves as an Associate Technical Editor for IEEE Communications Magazine. He is the editor of six books, including Big Data Analytics for Cyber-Physical Systems: Machine Learning for the Internet of Things, Elsevier, 2019, Smart Cities: Foundations, Principles and Applications, Hoboken, NJ: Wiley, 2017, Security and Privacy in Cyber-Physical Systems: Foundations, Principles and Applications, Chichester, UK: Wiley-

IEEE Press, 2017, *Cyber-Physical Systems: Foundations, Principles and Applications*, Boston, MA: Academic Press, 2016, and *Industrial Internet of Things: Cybermanufacturing Systems*, Cham, Switzerland: Springer, 2016. He is the author of more than 100 articles. His research interests include cyber-physical systems, cybersecurity and privacy, internet of things, edge computing, big data analytics, unmanned aircraft systems, connected vehicle, smart and connected health, and wireless communications and networking.

Dr. Song is a senior member of ACM. Dr. Song was a recipient of the prestigious Air Force Research Laboratory's Information Directorate (AFRL/RI) Visiting Faculty Research Fellowship in 2018, and the very first recipient of the Golden Bear Scholar Award, the highest campus-wide recognition for research excellence at West Virginia University Institute of Technology (WVU Tech), in 2016.

SUBMISSION AND REVIEW OF PAPERS

Submitted papers should be original and not be under consideration elsewhere for publication. The authors should follow the journal guidelines, regarding the manuscript content and its format when preparing their manuscripts. All papers will be reviewed by at least three independent reviewers for their suitability in terms of technical novelty, scientific rigor, scope, and relevance to this special issue