

IEEE

CCCI
2021

**2021 IEEE International Conference on
Communications, Computing, Cybersecurity
and Informatics, CCCI 2021**

**Will Be Held Virtual
October 15-17, 2021**

All Times are based on Beijing, China Local Time

Technical Sponsors:





CCCI 2021 General Chairs' Message

Welcome to the 2021 IEEE International Conference on Communications, Computing, Cybersecurity, and Informatics (CCCI 2021), which is expected to be held on an annual basis.

The conference was supposed to be held in Beijing, China, but due to COVID-19 situation, here we are holding it virtually.

IEEE CCCI 2021 offers a unique forum for researchers and practitioners from academia, industry, business, and government to share their expertise results and research findings in all areas of Communications, Computing, Cybersecurity and Informatics.

This year's conference includes an outstanding technical program, and distinguished keynote speeches, which will be given by world renowned top scholars/researchers. These include Franco Davoli from University of Genoa, Italy, Imad Mahgoub from Florida Atlantic University, Michele Luglio from University of Rome "Tor Vergata", Italy, and Sasitharan (Sasi) Balasubramaniam from University of Nebraska-Lincoln, USA.

CCCI 2021 technical program lasts for 3 days with many sessions. The topics covered in the program are basically in the major theses of Communications, Computing, Cybersecurity and Informatics.

This year, we received a large number of quality papers. Only very high quality papers have been accepted. The acceptance ratio in the conference is about 48 %. This is indicative of the diligent work of the technical program committee chairs, technical program committee members and reviewers. The accepted papers come from all over the World with representation from academia, industry, business and government. Moreover, accepted papers will appear in IEEE Xplore.

Many individuals have contributed to the success of this high caliber international conference. Our sincere appreciation goes to all authors including those whose papers were not included in the program. Many thanks are also due to our distinguished keynote speakers for their valuable contribution to the conference.

Special thanks are also due to the senior program chair, Prof. Petros Nicopolitidis, for his outstanding role in leading the technical program efforts. Thanks also are due to the other program chairs. Many thanks also go to the technical program committee members and reviewers for their timely work and efforts.

Special thanks go to the publication chairs, Yu Guo for his outstanding work and dedication. Thanks to our dedicated Webmaster Antonio Bueno. Special thanks go to the international publicity committee members and international liaisons for their excellent work.

Special thanks are due to the international steering committee of the CCCI. We also like to thank the IEEE Communication Society for technical co-sponsorship of the conference.

We are grateful to the support of the leadership, faculty and staff of the University of Science and Technology Beijing (USTB) for the great efforts, which helped us to have a very successful event.

Finally, on behalf of the 2021 IEEE International Conference on Communications, Computing, Cybersecurity and Informatics (CCCI 2021), we invite all of you to enjoy the program.

Prof. Mohammad S. Obaidat, General Chair, Fellow of IEEE, Fellow of SCS, Past President of the Society for Modeling & Simulation International (SCS), Founding Editor in Chief, Wiley Security and Privacy Journal, Editor in Chief, International Journal of Communication Systems, Recipient of SCS Hall of Fame Award, Recipient of the Technical Achievement Award from IEEE ComSoc-Technical Committee on Communication Software

Prof. Xiaojuan Ban

General Chair

Senior Member of IEEE

Prof. Kuei-Fang (Leila) Hsiao

Executive General Chair

Senior Member of IEEE

Prof. Petros Nicopolitidis

Senior Program Chair

Senior Member of IEEE

Prof. Imad Mahgoub

Program Chair

Senior Member of IEEE

Prof. Zhaolong Ning

Program Chair

Senior Member of IEEE

Prof. Xiaokun Wang

Program Chair

Member of IEEE

Prof. Chao Yao

Program Chair

Member of IEEE

Prof. Honghao Gao

Program Chair

Member of IEEE

Dr. Yu Guo

Publication Chair

Member of IEEE

Dr. Antonio Bueno

Web Master

Member of IEEE



**Prof. Mohammad. S.
Obaidat**



Prof. Xiaojuan Ban



**Prof. Kuei-Fang (Leila)
Hsiao**



Prof. Petros Nicopolitidis



Prof. Imad Mahgoub



Prof. Zhaolong Ning



Prof. Xiaokun Wang



Prof. Chao Yao



Prof. Honghao Gao



Dr. Yu Guo



Dr. Antonio Bueno

Committees

Organizing Committee

General Chairs

Mohammad S. Obaidat, Fellow of IEEE and Fellow of SCS, King Abdullah II School of Information Technology, University of Jordan, Amman, Jordan, with University of Science and Technology Beijing, Beijing, China and with The Amity University, Noida, India
Xiaojuan Ban, Univ. of Science and Technology Beijing, China

Executive General Chair

Kuei-Fang (Leila) Hsiao, Univ. of Sharjah, UAE

Senior Program Chair

Petros Nicopolitidis, Aristotle Univ., Greece

Program Chairs

Imad Mahgoub, Florida Atlantic Univ., USA
Zhaolong Ning, Dalian Univ. of Technology, China
Xiaokun Wang, Univ. of Science and Technology Beijing, China
Chao Yao, Univ. of Science and Technology Beijing, China
Honghao Gao, Shanghai Univ., China

Special Sessions and Workshops Chair

Sahil Garg, ÉTS, Univ. du Québec, Canada

Tutorials Chair

Sudip Misra, Indian Institute of Technology - Kharagpur, India

Publication Chair

Yu Guo, Univ. of Science and Technology Beijing, China

Publicity Chairs

Mahmoud Elkhodr, Central Queensland Univ., Australia
Kuljeet Kaur, ÉTS, Univ. du Québec, Canada
Seungmin (Charlie) Rho, Chung-Ang Univ., Korea
Hamzah Al-Najada, NextEra Energy, Inc., USA
Sudeep Tanwar, Nirma Univ., India
Li Xi, BUPT, China
Xiaokang Wang, St Francis Xavier Univ., Canada
Manar Abu Talib, Univ. of Sharjah, UAE
Hongzhen Shi, Yunnan Minzu Univ., China
Yalan Zhang, Univ. of Science and Technology Beijing, China
Boyuan Ma, Univ. of Science and Technology Beijing, China
Yuanyuan Xie, Univ. of Science and Technology Beijing, China

Registration and Finance Chair

Kuei-Fang (Leila) Hsiao, Univ. of Sharjah, UAE

Webmaster

Antonio Bueno, Univ. of Girona, Spain

Steering Committee

Pascal Lorenz, Univ. of Haute Alsace, France
Imad Mahgoub, Florida Atlantic University USA
Mario Marchese, Univ. of Genoa, Italy
Mohammad S. Obaidat, Univ. of Sharjah, UAE (Chair)
Joel Rodrigues, Federal Univ. of Piaui, Brazil
George A. Tsihrintzis, Univ. of Piraeus, Greece
Laurence T. Yang, St. Francis Xavier Univ., Canada
Zhaolong Ning, Dalian Univ. of Technology, China
Albert Zomaya, Univ. of Sydney, Australia

Technical Program Committee

Fatih Alagoz, Boğaziçi Univ., Turkey
Izzat Alsmadi, Texas A&M Univ., USA
Hamid Arabnia, Univ. of Georgia, USA
Georgia Beletsoti, Aristotle Univ. of Thessaloniki, Greece
Igor Bisio, Univ. of Genoa, Italy
Luca Cavaglione, National Research Council (CNR), Italy
Han-Chieh Chao, National Ilan Univ., Taiwan
Zhikui Chen, Dalian Univ. of Technology, China
Ashok Kumar Das, International Institute of IT, Hyderabad, India
Franco Davoli, Univ. of Genoa, Italy
Mahmoud Elkhodr, Central Queensland Univ., Australia
Jose Luis Guisado, Univ. de Sevilla, Spain
Helen Karatza, Aristotle Univ. of Thessaloniki, Greece
Georgios Keramidas, Aristotle Univ. of Thessaloniki, Greece
Abdelmajid Khelil, Landshut Univ. of Applied Sciences, Germany
Stelios Krinidis, Centre for Research and Technology, Hellas, Greece
Xiong Li, Hunan Univ. of Science and Technology, China
Chi Lin, Dalian Univ. of Technology, China
Pascal Lorenz, Univ. of Haute Alsace, France
Imad Mahgoub, Florida Atlantic University USA
Farid Nait-Abdesselam, Univ. of Missouri Kansas City, USA
Athanasios Nikolaidis, Technological Educational Institute of Serres, Greece
Zhaolong Ning, The Univ. of Hong Kong., China
Tommaso Pecorella, Univ. degli Studi di Firenze, Italy
Jun Peng, UTRGV - Edinburg, TX, USA
Deepak Puthal, Newcastle Univ., UK
Joel Rodrigues, Federal Univ. of Piauí (UFPI), Brazil
Evangelos Sakkopoulos, Univ. of Piraeus, Greece
Angel-Antonio San-Blas, Univ. of Elche, Spain
Georgios Stavrinos, Aristotle Univ. of Thessaloniki, Greece
Eleftherios Tiakas, Aristotle Univ. of Thessaloniki, Greece
George Tsihrintzis, Univ. of Piraeus, Greece
Pere Vila, Univ. de Girona, Spain
Gang Wang, PCTEL Inc., USA
Jay Wang, USA
Jiacun Wang, Monmouth Univ., USA
Tin-Yu Wu, National Ilan Univ., Taiwan
Laurence T. Yang, St. Francis Xavier Univ., Canada
Sherali Zeadally, Univ. of Kentucky, USA

List of reviewers

Basmh Alkanjr, FAU, USA
Hani Alnami, Florida Atlantic University, USA
Hamidreza Asefi-Ghamari, Florida Atlantic University, USA
Georgia Beletsoti, Aristotle University of Thessaloniki, Greece
Han-Chieh Chao, National Ilan University, Taiwan
Zhikui Chen, Dalian University of Technology, China
Ray Colucci, FAU, USA
Alain Edwards, Florida Atlantic University, USA
Maryam Eneim, FAU, USA
Honghao Gao, Shanghai University, China
Kuei-Fang Leila Hsiao, University of Sharjah, United Arab Emirates
Muhammad Awais Javed, COMSATS University Islamabad, Pakistan
Helen Karatza, Aristotle University of Thessaloniki, Greece
Abdelmajid Khelil, Landshut University of Applied Sciences, Germany
Stelios Krinidis, Centre for Research and Technology Hellas, Greece
Scahin Kumar, Amity University Lucknow Campus (UP) India, India
Elnaz Limouchi, Florida Atlantic University, USA
Pascal Lorenz, University of Haute Alsace, France
Sudip Misra, Indian Institute of Technology-Kharagpur, India
Imran Mohammed, Florida Atlantic University, USA
Anand Nayyar, Duy Tan University, Vietnam
Petros Nicopolitidis, Aristotle University of Thessaloniki, Greece
Athanasios Nikolaidis, Technological Educational Institute of Serres, Greece
Zhaolong Ning, Chongqing University of Posts and Telecommunications, China
Tommaso Pecorella, Università degli Studi di Firenze, Italy
Jun Peng, UTRGV - Edinburg, TX, USA
Monika Rathod, Florida Atlantic University, USA
Evangelos Sakkopoulos, University of Piraeus, Greece
Vassilis Solachidis, Centre for Research and Technology Hellas, Greece
Georgios L. Stavrinides, Aristotle University of Thessaloniki, Greece
Madiha Syed, Florida Atlantic University, USA
Eleftherios Tiakas, Aristotle University of Thessaloniki, Greece
Athanasios Tsakmakis, Aristotle University of Thessaloniki, Greece
Polixeni Tsompanoglou, Aristotle University of Thessaloniki, Greece
Anastasios Valkanis, Aristotle University of Thessaloniki, Greece
Jay Wang, USA
Xiaokun Wang, University of Science and Technology Beijing, China
Athanasios Xanthopoulos, Aristotle University of Thessaloniki, Greece
Chao Yao, University of Science and Technology, Beijing, China
Hooman Yousefizadeh, Next Era Energy, USA

Program At a Glance
All Times Listed here are Based on
China Local Time

Friday, October 15		Saturday, October 16		Sunday, October 17	
Join Zoom Meeting: *		Join Zoom Meeting: *		Join Zoom Meeting: *	
Meeting ID: *		Meeting ID: *		Meeting ID: *	
Passcode: *		Passcode: *		Passcode: *	
10.00-10.30	Opening Session	11.00-12.30	Cybersecurity 1	11.00-12.30	Informatics 1
10.30-11.30	Keynote Speech 1	12.30-14.00	Cybersecurity 2	12.30-14.00	Informatics 2
11.30-12.30	Keynote Speech 2	14.00-14.15	Break	14.00-14.15	Break
12.30-13.00	Break	14.15-15.45	Cybersecurity 3	14.15-15.45	Informatics 3
13.00-14.00	Keynote Speech 3	15.45-17.15	Communications	15.45-16.15	Closing Session
14.00-15.00	Keynote Speech 4	17.15-18.45	Computing		

- **Info was sent directly to presenting authors - Please do not share the info of ZOOM IDs and Passcodes with anyone except your co-authors.**

Schedule

FRIDAY, OCTOBER 15

Daily Program Chair: Yalan Zhang

10:00 - 10:30

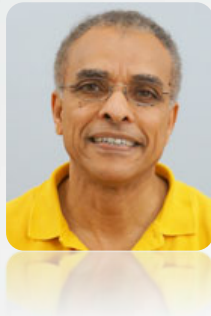
Opening Session

10:30 - 11:30

Keynote Speech 1

Adaptive Statistical Broadcast in Vehicular Ad Hoc Networks

Session Chair: Yalan Zhang



Distinguished Keynote speaker: Imad Mahgoub, Florida Atlantic Univ., USA

Vehicular Ad-hoc NETWORK (VANET) data dissemination applications are likely to rely on multi-hop wireless broadcast as a key communication method. Implementation of multi-hop broadcast by blindly retransmitting broadcast packets (flooding) is inefficient and can quickly saturate the network, a condition known as a broadcast storm. VANETs present several challenges to multi-hop broadcast protocols. For example, the relatively high mobility can cause node density, node distribution pattern, and channel quality to change rapidly. On isolated highways, vehicles are constrained along one-dimensional path. In regions with many nearby roads, vehicles may appear more uniformly distributed in two dimensions. Broadcast protocols for VANET must be capable of adapting to all these different scenarios.

Several multi-hop broadcast algorithms have been proposed, which can be broadly classified into topological and statistical. Topological protocols use the network topology to select rebroadcasting nodes. In VANETs, this can be a problem, since overhead messaging used to discover network topology may become a significant load on the network bandwidth. On the other hand, statistical broadcast protocols typically do not use this rapidly changing neighborhood information. They measure the value of one or more locally available variables and decide to rebroadcast based on a comparison of the measured value to a threshold value.

Because of the nature of VANET, statistical methods are a promising platform for multi-hop broadcast. The challenge then is to design a statistical protocol that exhibits high efficiency while achieving required reachability levels across the broad range of vehicular networking conditions.

In this keynote, we will describe our research effort to address the broadcast challenges in VANET. We will present adaptive statistical multi-hop broadcast solutions and discuss future research trends in VANET multi-hop broadcast.

Bio

Prof. Imad Mahgoub is the Tecore Endowed Chair Professor in the College of Engineering and Computer Science, Florida Atlantic University, USA. He is also the Director of Tecore Networks Laboratory at Florida Atlantic University.

Dr. Mahgoub received the Ph.D. degree in computer engineering from the Pennsylvania State University, University Park, the M.S. degree in electrical and computer engineering, and the M.S. degree in applied mathematics, both from North Carolina State University, Raleigh. His research interests include smart mobile computing, vehicular networks and intelligent transportation systems, internet of things, sensor and ad hoc wireless networking, machine learning and big data analytics, cybersecurity, smart health, smart cities, and parallel and distributed systems. His research has been funded by federal government agencies and the industry including NSF, DoD, Tecore Networks, Motorola, IBM, and Xpoint Technologies. He has guided 19 Ph.D. students and 34 M.S. students to completion and has more than 200 publications, including four books.

Dr. Mahgoub is a senior member of the IEEE and a member of the IEEE Communications Society, IEEE Vehicular Technology Society, and the ACM. He is on the editorial boards of the Wiley International Journal of Communication Systems, the Journal of Wireless Communications and Mobile Computing, and Electronics Journal (Electrical and Autonomous Vehicles Section). He served on the Editorial Board of the International Journal of Computers and Applications and the Encyclopedia of Wireless and Mobile Communications. He has served as program chair of CITS 2016-2020 and SPECTS 2015, vice chair, track chair, posters chair, publicity chair, and program committee member for many international conferences and symposia.

11:30 - 12:30

Keynote Speech 2

Molecular Communications: Bridging Theoretical and Experimental Research

Session Chair: Yu Guo



Distinguished Keynote speaker: Sasitharan (Sasi) Balasubramaniam, Univ. of Nebraska-Lincoln, USA

The emerging field of molecular communication aims to create a communication systems infrastructure that is constructed using biological components and systems that are found in nature. The development of such communication systems is possible through the combination of nanotechnology as well as synthetic biology, enabling biological cells to be reprogrammed in a similar manner as a computing device. The seminar will start with a general introduction to the field of molecular communications and then focus on a number of different example models that have been proposed. These includes bacteria that are used to create digital synthetic gates that can communicate and interconnect into circuits, calcium signaling and its properties in neuronal networks. The seminar will also touch on some example bio-nanomachine developments such as hydrogel based system that encapsulates engineered cells for communications. Lastly, the seminar will discuss a new paradigm known as the Internet of Bio-Nano Things.

Bio

Sasitharan (Sasi) Balasubramaniam received the Bachelors of Engineering (Electrical and Electronics) from the University of Queensland, 1998, Masters of Engineering Science (Computer and Communication Engineering) from the Queensland University of Technology, 1999, and the Ph.D in Computer Science from the University of Queensland, 2005. Sasi is currently an Associate Professor at the Department of Computer Science and Engineering at University of Nebraska-Lincoln, USA. He was previously the Director of Research at Walton Institute, Waterford Institute of Technology, Ireland and was also previously an Academy of Finland Research Fellow at Tampere University, Finland. His research interests includes molecular communications modeling and simulations, neural communication and nano networks brain implants, as well as the Internet of Bio -Nano Things (IoBNT). Sasi is currently an IEEE Senior Member and an ACM Member. He is currently an Associate Editor for IEEE Transactions on Mobile Computing, IEEE Transactions on Molecular, Biological, and Multi-scale Communications, and Editor for Elsevier Nano

Communication Networks. He was previously an Associate Editor for IEEE Internet of Things journal. In 2018 he was the IEEE Distinguished Lecturer for the Nanotechnology Council.

12:30 - 13:00

Break

13:00 - 14:00

Keynote Speech 3

Mobile Applications in 5G and Beyond – Orchestration, Performance Management and Energy Efficiency

Session Chair: Yuanyan Xie



Distinguished keynote speaker: Franco Davoli, DITEN-University of Genoa / CNIT National Laboratory of Smart and Secure Networks (S2N), Genoa, Italy

The fifth generation of mobile networks (5G) has been characterized by great improvements in terms of Key Performance Indicators (KPIs) with respect to the previous ones. Many of these are related to the mobile network segment; however, from the point of view of the network engineer in general, a major aspect has regarded a much stronger integration between the mobile and the fixed network. The network “softwarization” process is largely at the basis of such integration, embracing both switching, under the concept of Software Defined Networking (SDN), and the execution of Virtual Network Functions (VNFs), enabled by Network Functions Virtualization (NFV). For the network operator, softwarization brings forth new opportunities, allowing a stronger integration between communications and computing for the offering of new services, especially at the network edge (Mobile Edge Computing – MEC). The evolution toward the sixth generation (6G) will further develop this scenario with enhanced capabilities and more demanding KPIs. In such framework, characterized by the presence of multiple differentiated actors, like application developers, network service providers and infrastructure providers, as well as by extreme dynamicity in user-generated traffic and the ensuing usage of networking resources, network management and control will play a prominent role and will need to become increasingly automated to keep Operational Expenditures (OpEx) within reasonable limits. The goals to be pursued will be, on one hand, ensuring Quality of Service (QoS) requirements and, on the other, sustainability, in terms of energy consumption. This talk will consider some of the main aspects involved in the orchestration of application and network services with the above goals in mind, touching issues in modelling, lifecycle management of network functions and control.

Bio

Franco Davoli is Professor Emeritus at the University of Genoa, Department of Electrical, Electronic and Telecommunications Engineering, and Naval Architecture (DITEN). His current research interests are in dynamic resource allocation in multiservice networks and in the Future Internet, wireless mobile and satellite networks, multimedia communications and services, and in flexible, programmable and energy-efficient networking. He has co-authored over 380 scientific publications in international journals, book chapters and conference proceedings. In 2004 and 2011 he was Visiting Erskine Fellow at the University of Canterbury, Christchurch, New Zealand. He has been Principal Investigator in a large number of projects and has served in several positions in the Italian National Consortium for Telecommunications (CNIT), an independent organization joining 37 universities all over Italy. He was co-founder and Head, for the term 2003–2004, of the CNIT National Laboratory for Multimedia Communications, Naples, Italy, and Vice-President of the CNIT Management Board for the term 2005–2007. He is currently the Head of the CNIT National Laboratory of Smart and Secure Networks (S2N), based in Genoa, Italy, and

coordinator of the H2020 5G PPP 5G-INDUCE European project. He is a Life Senior Member of the IEEE.

14:00 - 15:00

Keynote Speech 4

The Sky-lift to the 5G (r)evolution

Session Chair: Kuei-Fang Hsiao



Distinguished Keynote speaker: Michele Luglio, Univ. of Rome "Tor Vergata", Italy

5G is being to be deployed and commercial service already started. The full exploitation of its capabilities is far to be achieved because so far only the physical layer innovations were actually implemented and in limited bandwidth while all the network management capabilities are far to be enjoyed.

The last years have been dedicated to progress in the design and development of innovative services and applications to properly and fruitfully use the satellite to complement terrestrial component to satisfy the requirements of 5G. Moreover, the adaption of the communication standard has been pursued.

Last but not least the advent of megaconstellations seems to be the technical solution but on the basis of available information some considerations will be shared.

Bio

Michele Luglio received the Laurea degree in Electronic Engineering at University of Rome "Tor Vergata" in 1990. He received the Ph.D. degree in telecommunications in 1994. From August to December 1992 he worked, as visiting Staff Engineering at Comsat Laboratories (USA). From 1995 to 2004 he was research and teaching assistant at University of Rome "Tor Vergata". He received the Young Scientist Award from ISSSE '95. In 2001 and 2002 he was visiting Professor at the Computer Science department of University of California Los Angeles (UCLA) to teach Satellite Networks class. From 2004 to present he is associate professor of telecommunications at University of Rome "Tor Vergata". In 2009 he received the Innovation Award from Telespazio. He teaches "Internet via Satellite" and "Telecommunications Fundamentals". He works in the frame of ESA, ASI, EC, MIUR, MISE projects on designing innovative satellite communications systems for multimedia services, both mobile and fixed, and coordinates the laboratory of the Satellite Multimedia Group at University of Rome Tor Vergata (www.tlcsat.it). His research is focused on network protocols, resource management, heterogeneous networks and on 5G development with particular regard to satellite systems. He was keynote speaker at AICT 2016 (Baku – Arzebaijan) and at ISAECT 2018 (Rabat – Morocco). He was general co-chair of IEEE ISNCC 2018, of ISAECT 2019 and ISAECT 2020. He was Technical Program Co-Chair of IEEE ISNCC 2019 and IEEE ISNCC 2020. He was track chair of "Satellites IoT and M2M Networks" at the Intern. Conference on Smart Applications, Networking and Communications (SmartNets 2018 and SmartNets 2019). He was track chair of Global 2020 Congress on Networking and Communications (GC-NetCom 2020) and of IEEE ISNCC 2020. He is Technical program chair member of the Steering and Advisory Board Committee of ISNCC 2021. He is general co-chair of ISAECT 2021. He is member of the editorial board of China Communications and of IAENG Engineering letters. He is associated editor of Space Communications section of Frontiers in Space Technologies. He was guest editor of the Journal of Sensor and Actuator Networks for the special issue on "Advanced Technologies for Smart Cities" in 2019/20 and in 2020/21. From 2018 to 2021 he was affiliated also to the Italian Space Agency. He has been the Italian expert delegate and co-chair of the advisory committee 5JAC of ESA. He is author of more than 170 international publications. He is president of NITEL consortium

Daily Program Chair: Chao Yao

11:00 - 12:30

Cybersecurity 1

Session Chair: Keiichi Shima

Catching Unusual Traffic Behavior Using TF-IDF-Based Port Access Statistics Analysis
Keiichi Shima (IIJ Innovation Institute, Japan)

tCLD-Net: A Transfer Learning Internet Encrypted Traffic Classification Scheme Based on Convolution Neural Network and Long Short-Term Memory Network

Xinyi Hu (State Key Laboratory of Mathematical Engineering and Advanced Computing & Henan Key Laboratory of Network Cryptography Technology, China); Chunxiang Gu (Henan Key Laboratory of Network Cryptography Technology, China); Yihang Chen (State Key Laboratory of Mathematical Engineering and Advanced Computing, China); Wei Fushan (Henan Key Laboratory of Network Cryptography Technology, China)

A Survey of Encrypted Malicious Traffic Detection

Hao Guo (Shandong University, China); Jiangang Hou (Beijing Institute of Technology, China); Zhi Liu (Shandong University, China)

Comparison and Analysis of Secret Image Sharing Principles

Jiayu Wang; Lintao Liu; Jia Chen; Xuehu Yan (National University of Defense Technology, China)

12:30 - 14:00

Cybersecurity 2

Session Chair: Yu Guo

Physical Layer Security of RIS-Assisted NOMA Networks over Fisher-Snedecor F Composite Fading Channel

Chunli Song and Xin Zhang (Beijing University of Posts and Telecommunications, China)

Intrusion Detection System Based on RF-SVM Model Optimized with Feature Selection

Dongliang Xuan, Huaping Hu, Bidong Wang and Bo Liu (National University of Defense Technology, China)

A Robust Anonymous Authentication Scheme Using Biometrics for Digital Rights Management System

Muhammad Ayaz Khan (International Islamic University, Pakistan); Anwar Ghani (International Islamic University Islamabad, Pakistan); Mohammad S. Obaidat (University of Jordan, USA); P Vijayakumar (Melpakkam, India); Khwaja Mansoor (Air University, Pakistan); Shehzad Chaudhry (Istanbul Gelisim University, Turkey)

14:00 - 14:15

Break

14:15 - 15:45

Cybersecurity 3

Session Chair: Petros Nicopolitidis

Android Malicious Application Detection Based on Support Filtering and Lasso LR Algorithm
Le Weng (Room 206, No. 2 Scientific Research Building, Haiyun Park, Xiamen University & Xiamen University, China); Lianfen Huang, Yingmin Zhang, Hengyu Liu and Chao Feng (Xiamen University, China)

Privacy Preserving Location-Based Content Distribution Framework for Digital Rights Management Systems
Dheerendra Mishra (Maulana Azad National Institute of Technology, Bhopal, India); Mohammad S. Obaidat (University of Jordan, USA); Ankita Mishra (Govt Nehru P G College, AgarMalwa, India)

An Effective Fair Off-Line Electronic Cash Protocol Using Extended Chaotic Maps with Anonymity Revoking Trustee
Chandrashekhar Meshram (Chhindwara University, India); Mohammad S. Obaidat (University of Jordan, USA); Kuei-Fang Leila Hsiao (University of Sharjah, United Arab Emirates); Agbotiname Lucky Imoize (University of Lagos, Nigeria & Ruhr University, Bochum, Germany); Akshaykumar J Meshram (Yeshwantrao Chavan College of Engineering, Nagpur, M.S., India.)

15:45 - 17:15

Communications

Session Chair: Xiaokun Wang

System Level Simulation for 5G Ultra-Reliable Low-Latency Communication
Lianfen Huang (Xiamen University, China); Tao Chen (Xiamen University, China); Zhibin Gao (Xiamen University Xiamen, China); Manman Luo and Zhang Liu (Xiamen University, China)

A Traffic Prediction Assisted Routing Algorithm for Elastic Optical Networks
Anastasios Valkanis, Petros Nicopolitidis and Georgia Beletsoti (Aristotle University of Thessaloniki, Greece); Georgios Papadimitriou (Aristotle University, Greece); Emmanouel Varvarigos (National Technical University of Athens & Computer Technology Institute, Greece)

Towards Safer Roads: An Efficient VANET-Based Pedestrian Protection Scheme
Khaled Rabieh (Metropolitan State University, USA); Ahmet Furkan Aydogan (Sam Houston State University, USA & Firat University, Turkey); Marianne Azer (National Telecommunication Institute + Nile University, Egypt)

Capsule: All You Need to Know About Tactile Internet in a Nutshell
Rajesh Gupta (Institute of Technology, Nirma University, India); Sudeep Tanwar (Institute of Technology Nirma University Ahmedabad Gujarat, India); Mohammad S. Obaidat (University of Jordan, USA); Sudhanshu Tyagi (Thapar Institute of Engineering & Technology, Deemed University, Patiala, India); Neeraj Kumar (Thapar University Patiala, India)

Computing

Session Chair: Helen Karatza

Fault-Tolerant Orchestration of Bags-Of-Tasks with Application-Directed Checkpointing in a Distributed Environment

Georgios L. Stavrinos and Helen Karatza (Aristotle University of Thessaloniki, Greece)

Discover Community Structure in Network by Optimization Algorithm Based on Modular Function

Xiaoling Guo, Yaqun Yang, Xinyu Song, Hongmiao Yao and Fudong Zhang (China University of Mining and Technology (Beijing), China)

Solid-Liquid Phase Transition and Interactive Simulation Using Particle-Based Method

Zihao Liu, Yanrui Xu, Xiaokun Wang, Xiaojuan Ban and Zhiyu Zheng (University of Science and Technology Beijing, China)

Code-Based Computation Offloading in Vehicular Fog Networks

Fangzhe Chen (Xiamen University, China); Zhibin Gao (Xiamen University Xiamen, China); Zhang Liu (Xiamen University, China); Lianfen Huang (Xiamen University, China); Yuliang Tang (Xiamen University, China)

SUNDAY, OCTOBER 17

Daily Program Chair: Yu Guo

11:00 - 12:30

Informatics 1

Session Chair: Avleen Malhi

Building Safer Autonomous Agents by Leveraging Risky Driving Behavior Knowledge

Ashish Rana (Thapar Institute of Engineering and Technology, India); Avleen Malhi (Bournemouth University, United Kingdom (Great Britain))

Legal and Regulation Retrieval System Base on Hierarchical Retrieval

Yue Chen, Yu Guo, Yuanyan Xie and Zhenqiang Mi (University of Science and Technology Beijing, China)

Real-Time Instance Segmentation for Low-Cost Mobile Robot Systems Based on Computation Offloading

Yuanyan Xie, Yu Guo, Yue Chen and Zhenqiang Mi (University of Science and Technology Beijing, China)

DPSGD Strategies for Cross-Silo Federated Learning

Matthieu Moreau (University of Angers & Talend, France); Tarek Benkhalif (Talend, France)

12:30 - 14:00

Informatics 2

Session Chair: Feilong Du

Classification of Soil Images Using Convolution Neural Networks

SK Hafizul Islam (Indian Institute of Information Technology Kalyani, India)

Optimization Method of Pneumonia Image Classification Model Based on Deep Transfer Learning

Shanyin Peng and Ning Wang (Shandong Management University, China)

Gibbs Free-Energy Prediction Method for Iron-Base Alloy Materials Based on Deep Learning

Yabin Xu (Beijing Science and Technology University, China); Shengjie Sun (Beijing Information Science and Technology University, China)

Cross-Modal Retrieval of Archives Based on Principal Affinity Representation

Xiaoqing Yang, Yuelong Zhu, Feng Jun and Jiamin Lu (Hohai University, China)

14:00 - 14:15

Break

14:15 - 15:45

Informatics 3

Session Chair: Zihao Liu

Detection of Coastal Green Macroalgae Based on SLIC, CNN and SVM

Jinghu Li (University of Ludong, China); Wang Lili (Ludong Univ, China); Qianguo Xing (Chinese Academy of Sciences, China)

Reference-Based Image Super-Resolution by Dual-Variational AutoEncoder
Mengyao Yang and Junpeng Qi (China Aerospace Academy of Systems Science and Engineering, China)

Solid-Liquid Dual Channel Data-Driven Method for Lagrangian Fluid Simulation
Feilong Du, Xiaojuan Ban, Yalan Zhang and Zirui Dong (University of Science and Technology Beijing, China)

XAI-AV: Explainable Artificial Intelligence for Trust Management in Autonomous Vehicles
Rajesh Gupta (Institute of Technology, Nirma University, India); Harsh Mankodiya (Nirma University, India); Mohammad S. Obaidat (University of Jordan, USA); Sudeep Tanwar (Institute of Technology Nirma University Ahmedabad Gujarat, India)

Energy Management Systems and Smart Phones: A Systematic Literature Survey
Omnia Abu Waraga (University of Sharjah, United Arab Emirates)

15:45- 16:15

Closing Session

