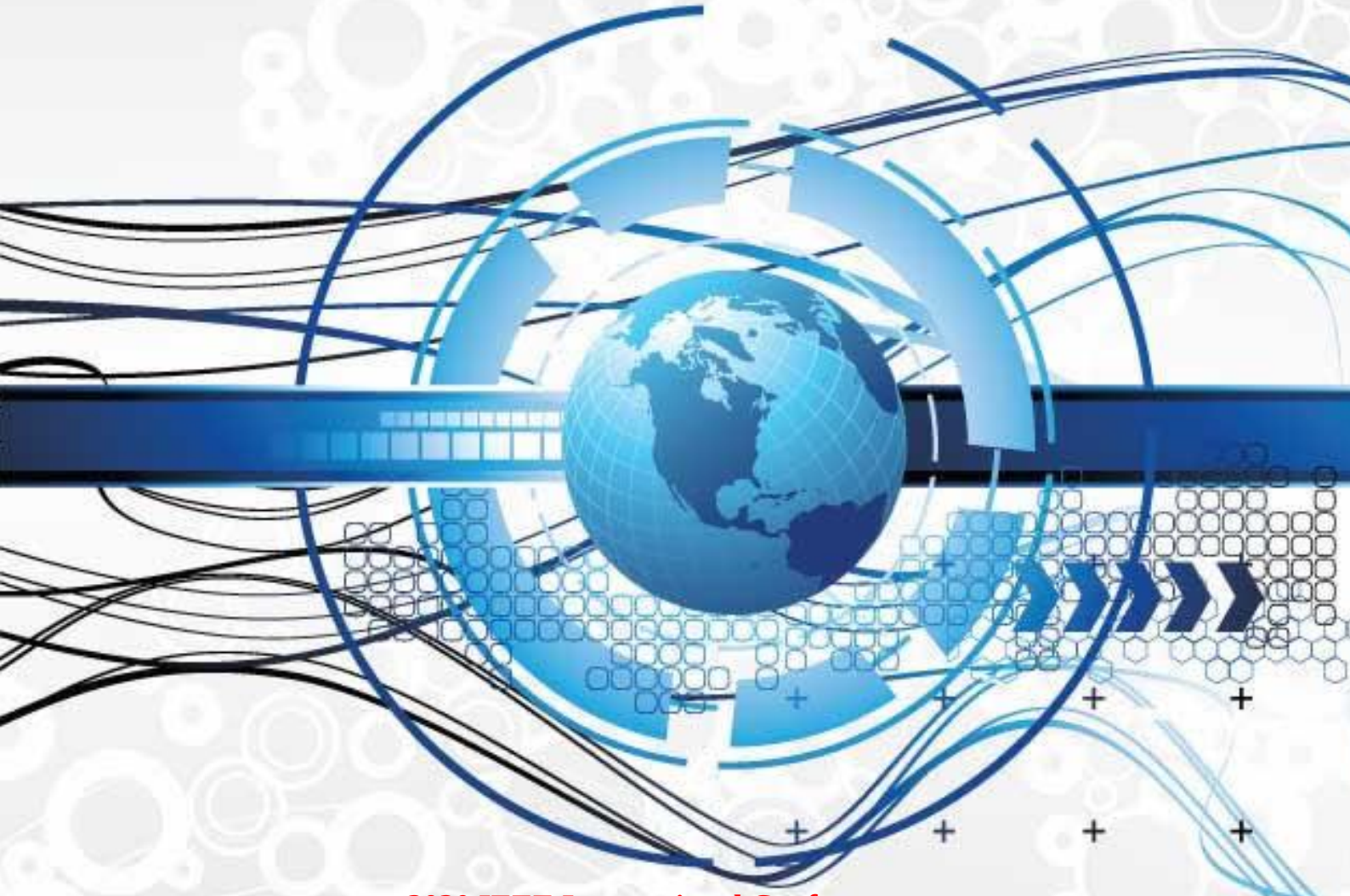
IEEE CCCI 2020

IEEE CCCI 2020 will be held Under the Patronage of
His Highness Sheikh Dr.Sultan bin Mohammed Al Qasimi
Member of the Supreme Council, Ruler of Sharjah, and President of the University of Sharjah



2020 IEEE International Conference on Communications, Computing, Cybersecurity and Informatics, CCCI 2020

Will Be Held Virtual
November 03-05, 2020
All Times are based on Sharjah, UAE Local Time

Technical Sponsors:

IEEE

IEEE ComSoc
IEEE Communications Society

جامعة الشارقة
UNIVERSITY OF SHARJAH

CCCI 2020 General Chairs' Message

Welcome to the 2020 IEEE International Conference on Communications, Computing, Cybersecurity, and Informatics (CCCI 2020), which is expected to be held on an annual basis.
The conference will be held Under the Patronage of His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi Member of the Supreme Council, Ruler of Sharjah, and President of the University of Sharjah.

IEEE CCCI 2020 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 eight distinguished keynote speeches, which will be given by world renowned top scholars/researchers. These include Geoffrey Charles Fox from Indiana University, USA, Albert Y. Zomaya from University of Sydney, Australia, Tuncer Oren from University of Ottawa, Canada, Helen Karatza from Aristotle University, Greece, Pierangela Samarati from Univ. degli Studi di Milano, Italy, Laurence T. Yang from St. Francis Xavier University, Canada, Hsiao-Hwa Chen from National Cheng Kung University, Taiwan, and Bin Zhou from Ascend Computing Business, Huawei, China.

We planned to have the conference to be held on the beautiful campus of the University of Sharjah, Sharjah, UAE, but due to COVID-19 situation, we will hold it virtual.

CCCI 2020 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. We received 116 papers and accepted only 52 papers, which makes the acceptance ratio 44.83 %. 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, Dr. Yu Guo and Dr. Daniel Cascado Caballero for their outstanding work and dedication. 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 very grateful to the support of the University of Sharjah (UoS) leadership represented by His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi,The President of the University, and His Excellency Prof. Hamid AL Naimiy, The Chancellor of the University for putting UoS resources under the disposal of the Conference, which helped us to have a very successful event.

Finally, on behalf of the 2020 IEEE International Conference on Communications, Computing, Cybersecurity and Informatics (CCCI 2020), 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

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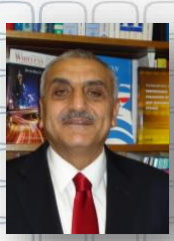

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Prof. Petros Nicopolitidis

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Prof. Deepak Puthal

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Program At a Glance

All Times Listed here are Based on UAE Local Time

Tuesday, November 3		Wednesday, November 4		Thursday, November 5	
Join Zoom Meeting: https://zoom.us/j/96365184710?pwd=bFJuQzhkci9HaVZWUkYxcnFMVHpyUT09		Join Zoom Meeting: https://zoom.us/j/92932337211?pwd=SW0zR0IrWmV6UVd1OXB6eUNnZGxQUT09		Join Zoom Meeting: https://zoom.us/j/98979423268?pwd=d255OTArQWxhWHdJY0RMcjBSaHBRUT09	
Meeting ID: 963 6518 4710		Meeting ID: 929 3233 7211		Meeting ID: 989 7942 3268	
Passcode: 052524		Passcode: 214859		Passcode: 145669	
9.00-9.30	Opening Session	9.00-10.30	Informatics 1	9.00-10.00	Keynote Speech 7
9.30-10.30	Keynote Speech 1	10.30-12.00	Informatics 2	10.00-11.30	Informatics 3
10.30-12.15	Communications 1	12.00-12.15	Break	11.30-13.00	Informatics 4
		12.15-13.15	Keynote Speech 4	13.00-13.15	Break
12.15-13.45	Communications 2	13.15-14.45	Cybersecurity 1	13.15-14.45	Informatics 5
13.45-15.30	Communications 3	14.45-16.15	Cybersecurity 2	14.45-16.15	Informatics 6
15.30-17.00	Computing	16.15-16.30	Break	16.15-17.15	Keynote Speech 8
17.00-18.00	Keynote Speech 2	16.30-17.30	Keynote Speech 5	17.15-18.45	Deep Learning And Applications
18.00-19.00	Keynote Speech 3	17.30-18.30	Keynote Speech 6	18.45-19.15	Closing Session

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Schedule

Tuesday, November 3

Daily Program Chair: Naveed Ahmed

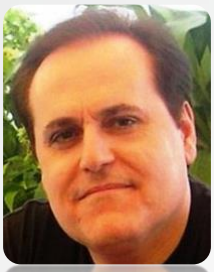
9:00 - 9:30

Opening Session

9:30 - 10:30

Keynote Speech 1

Lightweight Short-term Photovoltaic Power Prediction for Edge Computing
Session Chair: Ashraf Elnagar, Kuei-Fang Hsiao



Distinguished Keynote speaker: Albert Y. Zomaya, Univ. of Sydney, Australia

To meet the needs for energy savings in Internet of Things (IoT) systems, solar energy has been increasingly exploited to serve as a green and renewable source to allow systems to better operate in an energy-efficient way. In this respect, accurate photovoltaics (PV) power output prediction is a prerequisite for any energy saving scheme employed in these systems. In this talk, I am going to discuss a unified training framework combined with the LightGBM algorithm to obtain a prediction model, which can provide short-term predictions of PV power output. Compared with the training in a single powerful machine, our proposed framework is more energy-efficient and fits into devices with limited computation and storage capabilities. The experimental results show that our proposed framework is superior to other benchmark machine learning algorithms.

Bio

Albert Y. ZOMAYA is currently the Chair Professor of High Performance Computing & Networking in the School of Computer Science, University of Sydney. He is also the Director of the Centre for Distributed and High Performance Computing. He published more than 600 scientific papers and articles and is author, co-author or editor of more than 25 books.
He is the Founding Editor in Chief of the IEEE Transactions on Sustainable Computing and the Editor in Chief of the ACM Computing Surveys and previously he served as Editor in Chief for the IEEE Transactions on Computers (2011-2014). He delivered more than 190 keynote addresses, invited seminars, and media briefings and has been actively involved, in a variety of capacities, in the organization of more than 700 conferences.
Professor Zomaya is the recipient of many awards, such as, the IEEE Computer Society Technical Achievement Award (2014), the ACM MSWIM Reginald A. Fessenden Award (2017), and the New South Wales Premier's Prize of Excellence in Engineering and Information and Communications Technology (2019). He is a Chartered Engineer, a Fellow of AAAS, IEEE, IET (UK), an Elected Member of Academia Europaea, and an IEEE Computer Society's Golden Core member. Professor Zomaya's research interests lie in parallel and distributed computing, networking, and complex systems.

10:30 - 12:15

Communications 1

Session Chair: Ibrahim Kamel

Systematic Literature Review: Metaheuristics-Based Approach for Workflow Scheduling in Cloud
Dina Hejji; Ali Bou Nassif; Qassim MH Nasir; Manar AbuTalib

Automatic Digital Modulation Recognition Based on Machine Learning Algorithms
Sam Ansari; Khawla Alnajjar; Saeed Abdallah; Mohamed Saad

Reinforcement Learning in Traffic Prediction of Core Optical Networks Using Learning Automata
Anastasios Valkanis; Georgia Beletsioti; Petros Nicopolitidis; Georgios Papadimitriou; Emmanouel Varvarigos

A Survey: Resource Allocation Technology Based on Edge Computing in IIOT
Zifan Lin; Jinqing Liu; Jinchao Xiao; Shuangfei Zi

Throughput-Optimized Spectrum Cognizant Routing for Coded Military Cognitive Ad Hoc Radio Networks
Phetro Phaswana and Mthulisi Velempini

12:15 - 13:45

Communications 2

Session Chair: Josef Spillner

Parallel Semi-Blind Joint Timing-Offset and Channel Estimation for AF-TWRNs
Oruba Alfawaz; Ali A. El-Moursy; Khawla Alnajjar; Saeed Abdallah

Joint Carrier Frequency Offset, Timing Offset and Channel Estimation in Two-Way Relays
Fatimah Al-Rahmani; Saeed Abdallah

Comparison and Model of Compression Techniques for Smart Cloud Log File Handling
Josef Spillner

Power Attack and Detection Technology in Data Centers: A Survey
Shenglei Chen; Congfeng Jiang; Li Yan; Shuangshuang Guo

13:45 - 15:30

Communications 3

Session Chair: Congfeng Jiang

Performance and Energy-Tuning Methodology for Wireless Sensor Networks Using Tunable MAC
Ekereuke Udoh; Vladimir Getov

Performance Evaluation of Slotted-ALOHA-Based IoT Networks Under Asymmetric Traffic
Konstantina Spathi; Anastasios Valkanis; Georgia Beletsioti; Georgios Papadimitriou; Petros Nicopolitidis

On the Effect of Traffic Burstiness in LoRaWAN Networks' Performance
Athanasios Tsakmakis; Anastasios Valkanis; Georgia Beletsioti; Georgios Papadimitriou; Petros Nicopolitidis

A Study on Optimizing Laser Beam Waist for LEO-To-GEO Communication for 100 Kg-Class Satellite
Phong Xuan Do; Alberto Carrasco-Casado; Takayuki Hosonuma; Morio Toyoshima; Shinichi Nakasuka

A New Efficient Distributed Orthogonal Space Time Block Coding in Cooperative Relay Networks
Abdulghani M Elazreg; Ahmad Kharaz

15:30 - 17:00

Computing

Session Chair: Helen Karatza, Balqies Sadoun

Parallelization of Global Sequence Alignment on Graphics Processing Unit
Kailash Kalare; Mohammad S. Obaidat; Jitendra V Tembhurne; Chandrashekhar Meshram; Kuei-Fang Hsiao

Digital IIR Filter Design Using Bilinear Transformation in MATLAB
Beza Negash Getu

Virtual Machine Performance Analysis and Prediction
Yuegang Li; Congfeng Jiang; Shuangshuang Guo

Weighted Scheduling of Mixed Gang Jobs on Distributed Resources
Georgios L. Stavrinides; Helen Karatza

17:00 - 18:00

Keynote Speech 2

Grand Challenges in Modeling and Simulation: What M&S can do and what we should do for M&S?

Session Chair: Maamar Bettayeb, Imad Mahgoub

Distinguished Keynote speaker: Tuncer Ören, Univ. of Ottawa, Canada

Simulation, with its experimentation and experience aspects, already provides solutions in a multitude of diverse application areas.
Simulation is model based. From this fundamental aspect of simulation, emanated many other model-based disciplines. Progress continued and over 170 disciplines, methodologies, and approaches benefit of being simulation-based.
Several “Grand challenges in M&S studies” exist. Some of the early challenges are currently part of the state-of-the-art of M&S.

Bio

Dr. Ören is a professor emeritus of computer science at the University of Ottawa, Canada. He has been involved with simulation since 1965. His PhD. is in Systems Engineering from the University of Arizona, Tucson, AZ (1971). His research interests include: advancing methodologies for modeling and simulation; agent-directed simulation (including agent simulation, agent=supported simulation, and agent-monitored simulation), cognitive and emotive simulations (including modeling human personality, emotions, understanding, and computational awareness);reliability, failure avoidance;ethics; as well as •body of knowledge and terminology of modelling and simulation.
He authored / co-authored over 550 publications, including 55 books and proceedings and has contributed to over 500 conferences and seminars held in 40 countries.

Distinctions: Dr. Ören has been honored in several countries: Canada: He is recognized by IBM Canada, as a pioneer of computing in Canada (2005); and received the “Golden Award of Excellence” from the International Institute for Advanced Studies in Systems Research and Cybernetics (2018). India: “Lifetime Achievement Award (Overseas)” (International Academic and Research Excellence Awards - IARE-2020), GISR Foundation, India (2020). Turkey: "Information Age Award" from the Turkish Ministry of Culture (1991); “Honor Award” from the Language Association of Turkey (2012); and “Lifetime Service Award” from the Turkish Informatics Society and Turkish Association of Information Technology (2019).

18:00 - 19:00

Keynote Speech 3

Benchmarks and Data Engineering

Session Chair: Madjid Merabti, Deepak Puthal

Distinguished Keynote speaker: Geoffrey Charles Fox, Indiana Univ., USA

We discuss the interplay between Data Science and Data Engineering and how both must combine to power the Big Data Revolution. Also, we review the different aspects of data engineering needed to process large scale data and how it is implemented in the Cylon and Twister2 systems to support deep learning and Python notebooks. https://cylondata.github.io/cylon/ and https://twister2.org/. We will give application examples from COVID-19 daily data, solutions of ordinary differential equations, and other fields of science generating geospatial time series. And finally, we show how working with the industry consortium MLPerf, we may be able to establish a collection of science data benchmarks demonstrating best practices and motivating the next generation cyberinfrastructure.

Bio

Fox received a Ph.D. in Theoretical Physics from Cambridge University, where he was Senior Wrangler. He is now a distinguished professor of Engineering, Computing, and Physics at Indiana University, where he is the director of the Digital Science Center. He previously held positions at Caltech, Syracuse University, and Florida State University after being a postdoc at the Institute for Advanced Study at Princeton, Lawrence Berkeley Laboratory, and Peterhouse College Cambridge. He has supervised the Ph.D. of 73 students and published around 1500 papers (over 540 with at least ten citations) in physics and computing with a hindex of 82 and over 38000 citations. He is a Fellow of APS (Physics) and ACM (Computing) and works on the interdisciplinary interface between computing and applications. He is involved in several projects to enhance the capabilities of Minority Serving Institutions. He has experience in online education and its use in MOOCs for areas like Data and Computational Science.

WEDNESDAY, NOVEMBER 4

Daily Program Chair: Iman Akour

9:00 - 10:30

Informatics 1

Session Chair: Ismail Sahin

GPR and ANN Based Prediction Models for COVID-19 Death Cases
Anwar Hasan Jarndal; Saddam Husain; Omar Zaatar; Talal Al Gumaei; Amar Hamadeh

Studying the Similarity of COVID-19 Sounds Based on Correlation Analysis of MFCC
Mohammed Bader Alsabek; Ismaill M. Shahin; Abdelfatah Hassan

A Novel Approach to Predict the Real Time Sentimental Analysis on Internet Calling by Naive Bayes & RNN Algorithms During the COVID-19 Pandemic in UAE
Abdulrahman Turki Radaideh

Forecasting of Electric Peak Load Using ANN-Cascaded, ANN-NARX and GPR Techniques
Anwar Hasan Jarndal; Saddam Husain

10:30 - 12:00

Informatics 2

Session Chair: Manar Abu Talib

A Recommendation System for Diabetes Detection and Treatment
Iman Akour; Fatima Almatrooshi; Sumayya Alhammadi; Khaled F. Shaalan; Said Salloum

On Diabetes Classification and Prediction Using Artificial Neural Networks
Maha Diab; Saddam Husain; Anwar Hasan Jarndal

Heart Arrhythmia Abnormality Classification Using Machine Learning
Yaman Afadar; Ali Bou Nassif; Maha Alaa Eddin; Manar AbuTalib; Qassim Nasir

Genetic Algorithm Augmented Convolutional Neural Network for Image Recognition Applications
Omar Kaziha; Anwar Hasan Jarndal; Talal Bonny

12:00 - 12:15

Break

12:15 - 13:15

Keynote Speech 4

Cloud - Fog Computing for Real-Time Applications

Session Chair: Zaher AL Aghbari, Petros Nicopolitidis

Distinguished keynote speaker: Helen Karatza, Aristotle Univ. of Thessaloniki, Greece

Cloud computing has been established as an effective computing paradigm in science and business and many applications have been moved from traditional computing infrastructures to the cloud. Consequently, issues related to cloud resource allocation, application scheduling, timeliness, energy efficiency and cost have been important research areas. Particularly important in cloud computing is to run real-time applications. Effective scheduling techniques should be utilized ensuring that the deadlines will be met.

In recent years, smart devices and sensors have been widely adopted in many domains of life, contributing to the expansion of the Internet of Things (IoT). IoT applications generate huge amounts of data and most of them are real-time applications with hard deadlines. As a result, fog computing has appeared as a computing model extending the cloud to the edge of the network, thus reducing the latency of IoT data transmission and avoiding network congestion. The computational capacity of fog resources is usually limited, therefore appropriate scheduling of real-time applications is required to fully exploit the capabilities of cloud and fog computing ensuring QoS to the end users.

Towards this direction, in this keynote we will describe techniques and solutions to address challenges in scheduling real-time applications in cloud and fog computing platforms and we will conclude with future research trends in the cloud and fog computing areas.

Bio

Helen Karatza is a Professor Emeritus in the Department of Informatics at the Aristotle University of Thessaloniki, Greece. Dr. Karatza's research interests include Fog and Cloud Computing, Energy Efficiency in Large Scale Distributed Systems, Resource Allocation and Scheduling and Real-time Distributed Systems.

Dr. Karatza has authored or co-authored over 230 technical papers and book chapters including five papers that earned best paper awards at international conferences. She is senior member of IEEE, ACM and SCS, and she served as an elected member of the Board of Directors at Large of the Society for Modeling and Simulation International. She served as Chair and Keynote Speaker in International Conferences.

Dr. Karatza is the Editor-in-Chief of the Elsevier Journal “Simulation Modeling Practice and Theory”. She was Editor-in-Chief of “Simulation Transactions of The Society for Modeling and Simulation International”, Associate Editor of “ACM Transactions on Modeling and Computer Simulation” and Senior Associate Editor of the “Journal of Systems and Software” of Elsevier. She served as Guest Editor of Special Issues in International Journals. More info about her activities/publications can be found in agent.csd.auth.gr/~karatza/

13:15 - 14:45

Cybersecurity 1

Session Chair: Aine MacDermott

Digital Forensic Acquisition and Analysis of Discord Applications
Michal Motylinski; Aine MacDermott; Farkhund Iqbal; Mohammed Hussain; Saiqa Aleem

A Secure Algorithm for Deep Learning Training Under GAN Attacks
Aseem Prashar; Sergio A. Salinas

Cyber-Attacks on Smart Home Energy Management Systems Under Aggregators
Aksha Sajeev; Haile-Selassie Rajamani

HeaL: A Blockchain-Envisioned Signcryption Scheme for Healthcare IoT Ecosystems
Pronaya Bhattacharya; Payal Mehta; Sudeep Tanwar; Mohammad S. Obaidat

14:45 - 16:15

Cybersecurity 2

Session Chair: Glaucio Carvalho

Protecting the ESP8266 Module from Replay Attacks
Ivan Vaccari; Maurizio Aiello; Federico Pastorino; Enrico Cambiaso

Applying Privacy-Aware Policies in IoT Devices Using Privacy Metrics
Mona Tavakolan; Ismaeel Faridi

Optimal Security Cost for Latency-Aware Service Provisioning in Mobile Edge Computing
Glaucio Carvalho; Isaac Woungang; Alagan Anpalagan; Issa Traore

Android Malware Detection Using Static Features and Machine Learning
Ali Al Zaabi; Djedjiga Mouheb

16:15 - 16:30

Break

16:30 - 17:30

Keynote Speech 5

Data security and privacy in emerging scenarios

Session Chair: Kuei-Fang Hsiao, Zhaolong Ning

Distinguished Keynote Speaker: Pierangela Samarati, Univ. degli Studi di Milano, Italy.

The rapid advancements in Information and Communication Technologies (ICTs) have been greatly changing our society, with clear societal and economic benefits. Mobile technology, Cloud, Big Data, Internet of things, services and technologies that are becoming more and more pervasive and conveniently accessible, towards to the realization of a 'smart' society'. At the heart of this evolution is the ability to collect, analyze, process and share an ever-increasing amount of data, to extract knowledge for offering personalized and advanced services. A major concern, and potential obstacle, towards the full realization of such evolution is represented by security and privacy issues. As a matter of fact, the (actual or perceived) loss of control over data and potential compromise of their confidentiality can have a strong detrimental impact on the realization of an open framework for enabling collection, processing, and sharing of data, typically stored or processed by external cloud services. In this talk, I will illustrate some security and privacy issues arising in emerging scenarios, focusing in particular on the problem of managing data while guaranteeing confidentiality and integrity of data stored or processed by external providers.

Bio

Pierangela Samarati is a Professor at the Department of Computer Science of the Università degli Studi di Milano, Italy. Her main research interests are on data and applications security and privacy, especially in emerging scenarios. She has participated in several projects involving different aspects of information protection. On these topics, she has published more than 280 peer-reviewed articles in international journals, conference proceedings, and book chapters.
She has been Computer Scientist in the Computer Science Laboratory at SRI, CA (USA). She has been a visiting researcher at the Computer Science Department of Stanford University, CA (USA), and at the Center for Secure Information Systems of George Mason University, VA (USA). She is the chair of the IEEE Systems Council Technical Committee on Security and Privacy in Complex Information Systems (TCSPCIS), of the ERCIM Security and Trust Management Working Group (STM), and of the ACM Workshop on Privacy in the Electronic Society (WPES). She is a member of several steering committees. She is ACM Distinguished Scientist (named 2009) and IEEE Fellow (named 2012).
She has received the ESORICS Outstanding Research Award (2018), the IEEE Computer Society Technical Achievement Award (2016), the IFIP WG 11.3 Outstanding Research Contributions Award (2012), and the IFIP TC11 Kristian Beckman Award (2008). She has served as General Chair, Program Chair, and program committee member of several international conferences.

17:30 - 18:30

Keynote Speech 6

Cyber-Physical-Social Systems: Design, Analytics, Security and Privacy

Session Chair: Abdallah Shanableh, Husein Elmedi

Distinguished Keynote Speaker: Laurence T. Yang, St. Francis Xavier Univ., Canada

The booming growth and rapid development in embedded systems, wireless communications, sensing techniques and emerging support for cloud computing and social networks have enabled researchers and practitioners to create a wide variety of Cyber-Physical-Social Systems (CPSS) that reason intelligently, act autonomously, and respond to the users' needs in a context and situation-aware manner. The CPSS are the integration of computation, communication and control with the physical world, human knowledge and sociocultural elements. It is a novel emerging computing paradigm and has attracted wide concerns from both industry and academia in recent years.
Currently, CPSS are still in their infancy stage. Our first ongoing research is to study effective and efficient approaches for CPSS modeling and general system design automation methods, as well as methods analyzing and/or improving their power and energy, security, trust and reliability features.
Once the CPSS have been designed, they collect massive data (Volume) from the physical world by various physical perception devices (Variety) in structured/semi-structured/unstructured format and respond the users' requirements immediately (Velocity) and provide the proactive services (Veracity) for them in physical space or social space. These collected big data are normally high dimensional, redundant and noisy, and many beyond the processing capacity of the computer systems. Our second ongoing research is focused on the Big Data-as-a-Service framework, which includes data representation, dimensionality reduction, incremental and distributed processing, security and privacy, deep learning, clustering, prediction and proactive services, aiming at representing and processing big data generated from CPSS, providing more valued smart services for human and refining the previously designed CPSS.
This talk will present our latest research on these two directions. Corresponding case studies in some applications such as smart traffics will be shown to demonstrate the feasibility and flexibility of the proposed system design methodology and analytic framework.

Bio

Laurence T. Yang got his BE in Computer Science and Technology and BSc in Applied Physics both from Tsinghua University, China and Ph.D in Computer Science from University of Victoria, Canada. He is a professor and W.F. James Research Chair at St. Francis Xavier University, Canada. His research includes parallel, distributed and cloud computing, embedded and ubiquitous/pervasive computing, and big data. He has published 200+ papers in the above areas on top IEEE/ACM Transactions/Journals including 6 and 25 papers as top 0.1% and top 1% highly-cited ESI papers, respectively.

He has been involved actively act as a steering chair for 10+ IEEE international conferences. He is the chair of IEEE CS Technical Committee of Scalable Computing (2008-2011, 2018-), the co-chair of IEEE SMC Technical Committee on Cybermatics (2016-) and the vice-chair of IEEE CIS Technical Committee on Smart World (2016-2019). In addition, he is serving as an editor for many international journals and is an author/co-author or an editor/co-editor of more than 25 books from well-known publishers, invited to give around 50 keynote talks at various international conferences and symposia.

His recent honours and awards include IEEE Canada C. C. Gotlieb Computer Medal (2020), Fellow of Institute of Electrical and Electronics Engineers (2020), IEEE TCCPS Most Influential Paper Award on Cyber-Physical Systems (2020), IEEE SCSTC Most Influential Paper Award on Smart Computing (2019), IEEE TCBD Best Journal Paper Award on Big Data (2019), Clarivate Analytics (Web of Science Group) Highly Cited Researcher (2019), Fellow of Engineering Institute of Canada (2019), AMiner Most Influential Scholar Award for Internet of Things (2018), IEEE TCCPS Distinguished Leadership Award on Cyber-Physical Systems (2018), IEEE SCSTC Life-Career Achievement Award on Smart Computing (2018), Fellow of Canadian Academy of Engineering (2017), IEEE System Journal Best Paper Award (2017), IEEE TCSC Award for Excellence in Scalable Computing (2017), Elsevier JCSS Journal Most Cited Paper Award (2017) and the PROSE Award on Engineering and Technology (2010).

THURSDAY, NOVEMBER 5

Daily Program Chair: Ali ElMoursy

9:00 - 10:00

Keynote Speech 7

PHY-Layer Security via Resource Allocation in Cellular Underlay V2V Communications

Session Chair: Zhaolong Ning, Ahmed Al-Shammaa

Distinguished Keynote Speaker: Hsiao-Hwa Chen, National Cheng Kung Univ., Taiwan

Cellular underlay vehicle-to-vehicle (V2V) communication will play an important role in next generation mobile communications, where security is a critical issue. Most previous works relied on encryption/authentication algorithms to ensure V2V communication security. This work is to implement PHY-layer security via resource allocation in V2V communications. We formulate a secrecy capacity optimization problem, which is solved via decomposing a joint optimization problem into two subproblems: optimal subcarriers and power allocation problems. The subcarriers allocation subproblem is a three-dimensional (3D) search problem. We develop an iterative algorithm, based on which we transform a non-convex power allocation problem to a convex form before solving it using an alternating maximization (AM) algorithm. Simulation results validate the performance of the proposed resource allocation based PHY-layer security scheme.

Bio

Hsiao-Hwa Chen is currently a Distinguished Professor in the Department of Engineering Science, National Cheng Kung University, Taiwan. He obtained his PhD degree from the University of Oulu, Finland, in 1991. He authored or co-authored over 400 technical papers in major international journals and conferences, six books, and more than ten book chapters in the areas of communications. He served as the TPC chair for IEEE Globecom 2019. He served or is serving as an Editor or Guest Editor for numerous technical journals. He is the founding Editor-in-Chief of Wiley's Security and Communication Networks Journal. He is the recipient of the best paper award in IEEE WCNC 2008 and the IEEE 2016 Jack Neubauer Memorial Award. He served as the Editor-in-Chief for IEEE Wireless Communications from 2012 to 2015. He was an elected Member-at-Large of IEEE ComSoc from 2015 to 2016. He is a Fellow of IEEE, and a Fellow of IET.

10:00 - 11:30

Informatics 3

Session Chair: Ala' Altaweel

Temperature Dependent SVR and ANN Based I-V Models for GaN HEMTs
Anwar Hasan Jarndal; Saddam Husain; Amar Hamadeh; Omar Zaatar; Talal Al Gumaei

Survey on Hybrid Classical-Quantum Machine Learning Models
Maha A. Metawei; Hazem Said; Mohamed Taher; Hesham Eldeib; Salwa Nassar

A Post Dynamic Clustering Approach for Classification-Based Image Retrieval
Jitesh Pradhan; Arup Kumar Pal; SK Hafizul Islam

Deep Learning Regularization in Imbalanced Data
Firuz Kamalov; Ho Hon Leung

11:30 - 13:00

Informatics 4

Session Chair: Amel Al Ali, Saadat Al Hashem

Predicting the Power of a Combined Cycle Power Plant Using Machine Learning Methods
Salama Salim Alketbi; Ali Bou Nassif; Maha Alaa Eddin; Ismaill M. Shahin; Ashraf Elnagar

Fast Local Map Construction of Robot Using Semantic Priors
Nan Yang; Zhenqiang Mi; Yu Guo; Balqies Sadoun

Interplay of Machine Learning and Software Engineering for Quality Estimations
Hamza Abubakar; Mohammad S. Obaidat; Aaryan Gupta; Pronaya Bhattacharya; Sudeep Tanwar

A Smart System Based on Digital Object Architecture to Verify the Diploma Certificates
Mahmood Al-Bahri; Salim Al-Wardi; Ravindra R Dharamshi; Naeem Al-shukail; Ammar Muthanna

13:00 - 13:15

Break

13:15 - 14:45

Informatics 5

Session Chair: Mohd Nour

Modelling Audiograms for People with Dementia Who Experience Hearing Loss Using Multiple Linear Regression Method
Abeer Elkhouly; Hasliza A Rahim; Nidhal Abdulaziz; Mohd Fareq Abd Malek

Algorithm Appreciation: Algorithmic Performance, Developmental Processes, and User Interactions
Don D.H. Shin; Bouziane Zaid; Mohammed Ibahrine

An Empirical Analysis of the Role of Contextual Factors in Moderating the Performance Impact of ERP Systems
Mohamed A Nour

Access Permissions for Apple Watch Applications: A Study on Users' Perceptions
Muhammad Umair Shah; Umair Rehman; Farkhund Iqbal; Fazli Wahid; Mohammed Hussain; Ali Arslan

14:45 - 16:15

Informatics 6

Session Chair: Mohammed Lataifeh

Big Data Mining for Spatial-Temporal Characteristics of Catering Data
Xin Jiang; Yue Zeng; Bing Liu; Xiru Hou

Mining for the Preference of Funds Based on Subgraph Embedding of Fund-Stock Networks
Xin Jiang; Shangzhe Li; Xingkun Wang

Exploring Quantization-Aware Training on a Convolution Neural Network
Omar Kaziha; Talal Bonny

Utility Pattern Mining Based on the Rule of Utility Leverage
Yong Zhang

16:15 - 17:15

Keynote Speech 8

Full-Stack Optimization of AI Computing Architecture
Session Chair: Helen Karatza, Ashraf Elnagar

Distinguished Keynote Speaker: Bin Zhou, CTO of Ascend Computing Business, Huawei, China

AI algorithms require huge amount of computing power. However, the fundamental limits of current CMOS technology brings the end of Moore's Law and Dennard Scaling. So domain specific architectures (DSA) become the mainstream of AI processing systems. We present the full-stack optimization technologies used by Huawei ascend AI computing platform. By jointly optimizing micro-architecture of processing cores, hardware systems, networking, runtime, compiler, deep learning graph engine(GE), AI framework mindspore, AI application SDK MindX and deep learning models, our approach achieves very high performance while keeping great power efficiency and programmability. The Atlas 300 serious AI training system can reach as high as 320TFlops of training performance while consuming adequate amount of power. The Atlas 900 AI super computer can achieve best ResNet-50 training performance. We also open-sourced our AI framework, which is called mindspore, to help the AI research community to speed up their research work.

Bio

Professor Bin Zhou is the CTO of Ascend Computing Business of Huawei. He received his master and PhD Degrees from George Mason University and Tsinghua University, respectively. He worked in NVIDIA and was awarded the NVIDIA CUDA Fellow title. He worked as adjunct research professor in University of Science and Technology of China and now a professor of Shandong University, too. He was also the key member of famous AI startups SenseTime and NovuMind Inc. His work includes researches on AI algorithms, heterogonous computing, and GPU/NPU architecture.

17:15 - 18:45

Deep Learning and Applications
Session Chair: Ali Bou Nassif

Research on Robot's Indoor Object Finding Strategy Based on Semantic Relatedness
Zhao Zhao; Zhenqiang Mi; Yu Guo; Mohammad S. Obaidat

Cascaded RBF-CBiLSTM for Arabic Named Entity Recognition
Ayah Ahmed Mousa; Ismaill M. Shahin; Ali Bou Nassif; Ashraf Elnagar

PhishGAN: Data Augmentation and Identification of Homoglyph Attacks
Joon Sern Lee; David Yam; Jin Hao Chan

COVID-19 Detection System Using Recurrent Neural Networks
Abdelfatah Hassan; Ismaill M. Shahin; Mohammed Bader Alsabek

18:45- 19:15

Closing Session