

2021 IEEE International Congress
on
Intelligent And Service-Oriented Systems Engineering

(IEEE CISOSE 2021, 23rd – 26th August 2021)

<https://ieee-cisose-congress.org>

Technical Program

- **SOSE 2021:** The 15th IEEE International Conference on Service-Oriented System Engineering
- **MobileCloud 2021:** The 9th IEEE International Conference on Mobile Cloud Computing, Services, and Engineering
- **BigDataServices 2021:** The 7th IEEE International Conference on Big Data Computing Service and Machine Learning Applications
- **DAPPS 2021:** The 3rd IEEE International Conference on Decentralized Applications and Infrastructures
- **AITest 2021:** The 3rd IEEE International Conference on Artificial Intelligence Testing
- **JCC 2021:** The 2021 IEEE International Conference on Joint Cloud Computing
- **INV 2021:** Joint Invited Track: IEEE International Forum on The Vision of Intelligent and Service-Oriented Engineering
- **FTS 2021:** The 2021 IEEE Future Technology Summit
- **AV Test Challenge 2021:** 2021 IEEE Autonomous Driving AI Test Challenge

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Overall Program Outline

All times are in British Summer Time (UTC+1)

Day 0: 22 August 2021 (Sunday)

09:00 -- 18:30	Social and informal meetings (Online resources become available)
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Day 1: 23 August 2021 (Monday)

09:00 -- 09:50	Plenary Session: Opening								
09:50 -- 10:00	Break								
10:00 -- 11:00	Plenary Keynote 1: <i>Beautiful APIs</i>; Prof. Cesare Pautasso (University of Lugano, Italy) (SOSE); <i>Chair:</i> Guadalupe Ortiz Bellot, University of Cadiz, Spain.								
11:00 -- 11:30	Short Break and Social								
11:30 -- 12:30	Plenary Keynote 2: <i>High-Frequency Trading on Decentralized On-Chain Exchanges</i>; Dr Arthur Gervais (Imperial College London, UK) (DAPPS); <i>Chair:</i> Pedro Moreno-Sanchez, IMDEA Software Institute, Spain								
12:30 -- 14:00	Long Break								
14:00 -- 15:30	Parallel Sessions	SOSE 1	MC 1	DAPPS 1	BDS 1	AIT 1	JCC 1	INV 1	AV Test Challenge Demo
15:30 -- 16:00	Short Break and Social								
16:00 -- 17:30	Parallel Sessions	SOSE 2		DAPPS 2	BDS 2	AIT 2		INV 2	AV Test Challenge Demo
17:30 -- 19:00	Plenary Panel 1								

Day 2: 24 August 2021 (Tuesday) [IEEE Future Tech Summit]

UK Time	USA PST time	Tracks
4:30-5:00pm	8:30 - 9:00am	Future Tech Summit Opening
5:00-6:30pm	9:00 - 10:30am	Track 1A: Smart City AI and Future IOT Platform Track 3A: Digital Currency and Blockchain
6:30-6:45pm	10:30-10:45am	Break
6:45-8:15pm	10:45-12:15am	Track 1B: Smart City AI and Future IOT Platform Track 3B: Digital Currency and Blockchain
8:15-9:00pm	12:15-13:00pm	Break
9:00-10:30pm	13:00-14:30pm	Track 2: Future AI Technology Track 4: Future AV and Robotics Technology Track 5: Future AV Technology Track 6A: Smart City AI and Big Data
10:30-11:00pm	14:30-15:00pm	Break
11:00-12:30pm	15:00-16:30pm	Track 7: Smart Medtech and Healthcare Track 6B: Smart City AI and Big Data
	16:30-17:00pm	Break
	17:00-19:45pm	Track 8A: Smart UAV Technology and Applications
		Break
25 Aug. 2021	17:00-18:30pm	Track 8B: Smart UAV Technology and Applications
	18:30-18:45pm	Break
	18:45-20:15pm	Track 8C: Smart UAV Technology and Applications

Day 3: 25th August 2021 (Wednesday)

09:00 -- 10:30	Parallel Sessions	SOSE 3	MC 2	DAPPS 3	BDS 3	AIT 3	JCC 2	INV 3	
10:30 -- 11:00	Short Break and Social								
11:00 -- 12:30	Parallel Sessions	SOSE 4		DAPPS 4	BDS 4	AIT 4	JCC 3	INV 4	BDS-AI (Workshop)
12:30 -- 14:00	Long Break								
14:00 -- 15:00	Plenary Keynote 3: DL Testing: the What, the How, and the Why; Prof Paolo Tonella (Università della Svizzera Italiana, Switzerland) (AITest) <i>Chair:</i> Marc Roper, University of Strathclyde, UK.								
15:00 -- 15:30	Short Break and Social								
15:30 -- 16:30	Plenary Keynote 4: Medicare Fraud Detection and Big Data Challenges; Prof. Taghi Khoshgoftaar (Florida Atlantic University, USA) (BDS) <i>Chair:</i> Sean He, University of Technology, Australia								
16:30 -- 17:00	Short Break and Social								
17:00 -- 18:30	Plenary Session 2: Planning Meeting								

Day 4: 26th August 2021 (Thursday)

09:00 -- 10:30	Parallel Sessions	SOSE 5	MC 3		BDS 5	AIT 5	AV Test Challenge 1	WOBDS 1 (Workshop)	
10:30 -- 11:00	Short Break and Social								
11:00 -- 12:30	Parallel Sessions			DAPPS 5	BDS 6		AV Test Challenge 2	WOBDS 2 (Workshop)	
12:30 -- 14:00	Long Break								
14:00 -- 15:00	Plenary Keynote 5: Low-latency Serverless Computing: Characterization, Optimization and Outlook; Prof. Chen Haibo (Shanghai Jiao Tong University, China) (JCC) <i>Chair:</i> Jie Xu, The University of Leeds, UK								
15:00 -- 15:30	Short Break and Social								
15:30 -- 16:30	Plenary Keynote 6: Federated Learning for Mobile Sensing Data; Prof. Cristian Borcea (New Jersey Institute of Technology, USA) (MobileCloud) <i>Chair:</i> Yan Bai, University of Washington Tacoma, USA								
16:30 -- 17:00	Short Break and Social								
17:00 -- 18:00	Plenary Session 3: Award of Best Papers and Award of AV Test Challenge								
18:00 -- 18:30	Plenary Session 4: Closing								

Keynotes and Plenary Sessions

Day 1: 23 August 2021 (Monday)

- 09:00 -- 09:50: **Plenary Session: Opening**
- 10:00 -- 11:00: **Plenary Keynote 1: *Beautiful APIs***; Prof. Cesare Pautasso (University of Lugano, Italy) (SOSE); *Chair*: Guadalupe Ortiz Bellot, University of Cadiz, Spain.
- 11:30 -- 12:30: **Plenary Keynote 2: *High-Frequency Trading on Decentralized On-Chain Exchanges***; Dr Arthur Gervais (Imperial College London, UK) (DAPPS); *Chair*: Pedro Moreno-Sanchez, IMDEA Software Institute, Spain
- 17:30 -- 19:00: **Plenary Panel 1**

Day 3: 25th August 2021 (Wednesday)

- 14:00 -- 15:00: **Plenary Keynote 3: *DL Testing: the What, the How, and the Why***; Prof Paolo Tonella (Università della Svizzera Italiana, Switzerland) (AITest) *Chair*: Marc Roper, University of Strathclyde, UK.
- 15:30 -- 16:30: **Plenary Keynote 4: *Medicare Fraud Detection and Big Data Challenges***; Prof. Taghi Khoshgoftaar (Florida Atlantic University, USA) (BDS) *Chair*: Sean He, University of Technology, Australia
- 17:00 -- 18:30: **Plenary Session 2: Planning Meeting**

Day 4: 26th August 2021 (Thursday):

- 14:00 -- 15:00: **Plenary Keynote 5: *Low-latency Serverless Computing: Characterization, Optimization and Outlooking***; Prof. Chen Haibo (Shanghai Jiao Tong University, China) (JCC) *Chair*: Jie Xu, The University of Leeds, UK
- 15:30 -- 16:30: **Plenary Keynote 6: *Federated Learning for Mobile Sensing Data***; Prof. Cristian Borcea (New Jersey Institute of Technology, USA) (MobileCloud) *Chair*: Yan Bai, University of Washington Tacoma, USA
- 17:00 -- 18:00: **Plenary Session 3: Award of Best Papers and Award of AV Test Challenge**
- 18:00 -- 18:30: **Plenary Session 4: Closing**

Technical Program of SOSE 2021

SOSE 1: Service Systems Infrastructures (23 Aug 14:00 -- 15:30)

Session Chair: Guido Wirtz, University of Bamberg, Germany

- *Why Many Benchmarks Might Be Compromised*, Johannes Manner and Guido Wirtz
- *Collaborative Cloud - Edge: A Declarative API orchestration model for the NextGen 5G Core*, Oana-Mihaela Ungureanu, Calin Vladeanu and Robert Kooij
- *COSINEHUB: A New Software Development System in Collective Intelligence Environment*, Jianyang Shi, Wenjian Xu, Qi Yuan, Junjin Zheng, Qingji Ren, Xuechao Li, Deyi Huang, Hongbing Wang and Haijun Zhang

SOSE 2: Security Engineering for Service Systems (23 Aug 16:00 -- 17:30)

Session Chair: Stephan Reiff-Marganiec, University of Derby, UK

- *Cloud-Based Blockchains for Secure and Reliable Big Data Storage Service in Healthcare Systems*, Alvin Thamrin and Haiping Xu
- *Accessing Smart City Services in Untrustworthy Environments via Decentralized Privacy-Preserving Overlay Networks*, Heiko Bornholdt, Kevin Röbert and Philipp Kisters
- *Predicting Information Technology Outages from Heterogeneous Logs*, Xiaotong Liu, Anbang Xu and Rama Akkiraju

SOSE 3: Microservice Systems (25 Aug 09:00 -- 10:30)

Session Chair: Zhongjie Wang, Harbin Institute of Technology, China

- *A Runtime Visualizer For Microservices*, James Marshall and Gerald Kotonya
- *Inferring Relations Among Test Programs in Microservices Applications*, Emanuele De Angelis, Guglielmo De Angelis, Alessandro Pellegrini and Maurizio Proietti
- *An Advanced DevOps Environment for Microservice-based Applications*, Stefan Throner, Heiko Hütter, Niklas Sängler, Michael Schneider, Simon Hanselmann, Patrick Petrovic and Sebastian Abeck

SOSE 4: Intelligent Services for a Smart World (25 Aug 11:00 -- 12:30)

Session Chair: Zhongjie Wang, Harbin Institute of Technology, China

- *Incorporating Multimodal Sentiments into Conversational Bots for Service Requirement Elicitation*, Demin Yu, Junrui Tian, Tonghua Su, Zhiying Tu, Xiaofei Xu and Zhongjie Wang
- *RectorDApp: Decentralized Application for Managing University Rector Elections*, Jesús Rosa-Bilbao and Juan Boubeta-Puig
- *A Vision for Integration and Composition of AI Planning ==> A Vision for Composing, Integrating, and Deploying AI Planning Functionalities*, Ilche Georgievski and Uwe Breitenbücher

SOSE 5: Crowdsourcing in Services (26 Aug 9:00 -- 10:3)

Session Chair: Guadalupe Ortiz Bellot, University of Cadiz, Spain

- *Novel Metrics for Social Collaboration Processes*, Kuo Wang and Zhongjie Wang
- *Crowd science for Hybrid AI Applications*, Ekaterina Taran, Veronika Malanina and Fabio Casati

Technical Program of MobileCloud 2021

MC1: Regular Papers (23 Aug, 14:00 -- 15:30)

Session Chair: Jen Juan Li, North Dakota State University, USA

- *A Compilation-and Remote-Programming-as-a-Service Platform for IoT Devices*, Pavlos Charalampidis and Alexandros Fragkiadakis,
- *On fair cooperation among competing fog providers*, Roberto Beraldi

MC2: Invited Papers (25 Aug, 09:00 -- 10:30)

Session Chair: Hiroyuki Sato, The University of Tokyo, Japan

- *A Secure and Efficient Data Sharing Scheme with Outsourced Signcryption and Decryption in Mobile Cloud Computing*, Somchart Fugkeaw
- *Decentralized Identifiers and Self-Sovereign Identity - A New Identity Management for 6G Integration?* Axel Küpper

MC3: Panel (26 Aug. 09:00 -- 10:30)

Moderator: Paolo Bellavista, University of Bologna, Italy

Topic: Effective and Efficient IoT Networking: From Myths to Reality

Panellists: Paolo Bellavista, Wei Bao, Hiroyuki Sato

Technical Program of BigDataServices 2021

BDS 1: Deep Learning and Artificial Intelligence (23 Aug. 14:00 --15:30)

Session Chair: Prof. Magdalini Eirinaki, San Jose State University, USA

- *Understanding the Effects on Balance for Elite Platform Divers Using Machine Learning*, Gulustan Dogan, Blythe Layne, Seyda Ari, Morgan Glisson, Evan Kurpiewski, Michel Heijnen and Karl Ricanek
- *FMFParking: Federated Matrix Factorization For Parking Lot Recommendation*, Chiao-Yu Lu, Yushun Fan, Xing Wu and Junqi Zhang
- *Cyberbullying Classification based on Social Network Analysis*, Anqi Wang and Katerina Potika
- *Fake News Analysis and Graph Classification on a COVID-19 Twitter Dataset*, Kriti Gupta and Katerina Potika

BDS 2: Computer Vision (23 Aug. 16:00 --17:30)

Session Chair: Dr. Katerina Potika, San Jose State University, USA

- *Camera-Based Security Check for Face Mask Detection Using Deep Learning*, Ziwei Song, Jerry Gao, Catherine Cho, Kristie Nguyen and Tien Nguyen
- *Crop Identification Based on Remote Sensing Data using Machine Learning Approaches for Fresno County, California*, Sunanda Das Suchi, Aparna Menon, Ashima Malik, Jie Hu and Jerry Gao
- *Deepfake Detection using GAN Discriminators*, Sai Ashrith Aduwala, Manish Arigala, Shivan Desai, Heng Jerry Quan and Magdalini Eirinaki

BDS 3: Graph Mining and Fake Detection (25 Aug., 09:00-10:30)

Session Chair: Dr. Paul Townend, Umeå University, Sweden

- *Federated Learning for Object Detection in Autonomous Vehicles*, Deepthi Jallepalli, Navya Chennagiri Ravikumar, Poojitha Vurtur Badarinath, Shravya Uchil and Mahima Agumbe Suresh
- *Incremental Community Detection in Distributed Dynamic Graph*, Tariq Abughofa, Ahmed Harby, Farhana Zulkernine and Haruna Isah
- *HTIE: A Hierarchical Task Identification Framework for E-mails*, Ashish Chouhan, Venkata Siva Rami Reddy Sangireddy, Sarath Kumar Sridharababu, Syed Sameer Iqbal Fatmi, Dinesh Kumar Selvaraj, Anil Kumar Kanasani, Christoph Schneider, Florian Knupp, Luliia Tumanova and Ajinkya Prabhune

BDS 4: Big Data Service Performance (25 Aug. 11:00-12:30)

Session Chair: Prof. Jie Xu, University, of Leeds, UK

- *Towards Platform-Agnostic and Autonomous Orchestration of Big Data Services*, Stavroula Iatropoulou, Petros Petrou, Sophia Karagiorgou and Dimitrios Alexandrou
- *An Encoder-Decoder Deep Learning Approach for Multistep Service Traffic Prediction*, Theodoros Theodoropoulos, Angelos-Christos Maroudis, John Violos and Konstantinos Tserpes
- *TransKV: A Networking Support for Transaction Processing in Distributed Key-value Stores*, Hebatalla Eldakiky and David Hung-Chang Du

BDS 5: AutoML and Time Series Prediction (26 Aug, 09:00 -- 10:30)

Session Chair: Dr. Yassine Himeur, Qatar University, Qatar

- *Improving Neural Networks for Time Series Forecasting using Data Augmentation and AutoML*, Indrajeet Javeri, Mohammadhossein Toutiaee, Ismailcem Arpinar, Tom Miller and John Miller
- *A Deep Learning Approach for Short Term Prediction of Industrial Plant Working Status*, Paolo Nesi, Daniele Cenni, Pierfrancesco Bellini, Luciano Alessandro Ipsaro Palesi and Gianni Pantaleo
- *BOAT: A Bayesian Optimization AutoML Time-series framework for industrial applications*, John Joy Kurian, Marcel Dix, Ido Amihai, Glenn Ceusters and Ajinkya Prabhune

BDS 6: Big Data Learning and Performance Issues (26 Aug. 11:00-12:30)

Session Chair: Dr. Monica Vitali, Politecnico di Milano, Italy

- *Simulation Testbed for Evaluating Distributed Querying and Searching of Mass Spectrometry Big Data in a Network-based Infrastructure*, Umair Mohammad and Fahad Saeed
- *Mitigating Class Imbalance for IoT Network Intrusion Detection: A Survey*, Joffrey Leevy, Taghi Khoshgoftaar and Jared Peterson
- *Leveraging LightGBM for Categorical Big Data*, John Hancock and Taghi Khoshgoftaar
- *An Examination of Neural Networks on Cluster Computers*, Robert Kennedy and Taghi Khoshgoftaar

Technical Program of DAPPS 2021

DAPPS 1: Opening and Invited Talk (23 Aug, 14:00 -- 15:30)

Session Chair: Edgar Weippl, University of Vienna

- *Opening remarks*
- *Invited talk: Automated formal verification of Ethereum smart contracts: How far can we go?* Leo Alt, Ethereum Foundation

DAPPS 2: Blockchain Design & Cryptomining (23 Aug, 16:00 -- 17:30)

Session Chair: Stefan Schulte, Technical University of Vienna

- *Incentives Against Power Grabs or How to Engineer the Revolution in a Pooled Proof of Stake System*, Aggelos Kiayias, Elias Koutsoupias and Aikaterini-Panagiota Stouka
- *Blockchain Service Operations – A Structured Approach to Operate a Blockchain Solution*, Tim Hoiss, Karl Seidenfad and Ulrike Lechner
- *In-Browser Cryptomining for Good: An Untold Story*, Ege Tekiner, Abbas Acar, A. Selcuk Uluagac, Engin Kirda and Ali Aydin Selcuk

DAPPS 3: DeFi & Exchanges (25 Aug, 09:00 -- 10:30)

Session Chair: Alberto Sonnino, University College London

- *Development of a Token Design Framework*, Niels Schubert, Daniel Obermeier, Felix Kohlbrenner and Philipp Sandner
- *A First Look into DeFi Oracles*, Bowen Liu, Pawel Szalachowski and Jianying Zhou
- *Practical Exchange for Unique Digital Goods*, Oguzhan Ersoy, Ziya A. Genc, Zekeriya Erkin and Mauro Conti

DAPPS 4: Payment Channels & Privacy (25 Aug, 11:00 -- 12:30)

Session Chair: Sebastian Banescu, Quantstamp

- *The Merchant: Avoiding Payment Channel Depletion through Incentives*, Yuup van Engelshoven and Stefanie Roos
- *Blockchain is Watching You: Profiling and Deanonymizing Ethereum Users*, Ferenc Béres, István András Seres and András A. Benczúr,
- *Comparative Analysis of Lightning's Routing Clients*, Satwik Prabhu Kumble and Stefanie Roos

DAPPS 5: Smart Contract Design & Applications (26 Aug, 11:00 -- 12:30)

Session Chair: Konstantinos Votis, CERTH/ITI

- *Towards Cross-Blockchain Smart Contracts*, Markus Nissl, Emanuel Sallinger, Stefan Schulte and Michael Borkowski
- *TeSC: TLS/SSL-Certificate Endorsed Smart Contracts*, Ulrich Gellersdörfer and Florian Matthes
- *A Tree-based Construction for Verifiable Diplomas with Issuer Transparency*, Rodrigo Saramago, Leander Jehl, Hein Meling and Veronica Estrada-Galiñanes

Technical Program of AIT 2021

AIT 1: Detection and Testing (23 Aug 14:00 -- 15:30)

Session Chair: Rubing Huang, Macau University of Science and Technology, China

- *Model-based Data-Complexity Estimator for Deep Learning Systems*, Yuta Ojima, Shingo Horiuchi and Fuyuki Ishikawa.
- *Detection and Mitigation of Rare Subclasses in Deep Neural Network Classifiers*, Colin Paterson, Radu Calinescu and Chiara Picardi
- *Evaluation of T-Way Testing of DNNs in Autonomous Driving Systems*, Jaganmohan Chandrasekaran, Ankita Ramjibhai Patel, Yu Lei, Richard Kuhn and Raghu Kacker
- *Evolutionary Generation of Test Case for Deep Neural Network Based on Coverage Guidance*, Liming Hu, Shunhui Ji, Qiyin Dai, and Pengcheng Zhang

AIT 2: Robustness (23 Aug 16:00 -- 17:30)

Session Chair: Anurag Dwarakanath, Amazon, USA

- *Efficient Computation of Robustness of Convolutional Neural Networks*, Paolo Arcaini, Andrea Bombarda, Silvia Bonfanti and Angelo Gargantini
- *AI robustness analysis with consideration of corner cases*, Tinghui Ouyang, Yoshinao Isobe, Vicent Sanz Marco, Jun Ogata, Yoshiki Seo, and Yutaka Oiwa
- *Improving Robustness of Deep Learning Systems with Fast and Customizable Adversarial Data Generation*, Mehmet Melih Arıcı and Alper Sen
- *Heuristic-word-selection Genetic Algorithm for Generating Natural Language Adversarial Examples*, Shijun Ye, Pengcheng Zhang, Hai Dong, and Shunhui Ji

AIT 3: Autonomous Driving (25 Aug 09:00 -- 10:30)

Session Chair: Angelo Gargantini, University of Bergamo, Italy

Towards Trace-Graphs for Data-driven Test Case Mining in the Domain of Automated Driving, Noah Metzger, Lars Hoffmann, Christian Bartelt, Heiner Stuckenschmidt, Michael Wommer and Maria Belen Bescos del Castillo
Testing Autonomous Systems with Believed Equivalence Refinement, Chih-Hong Cheng and Rongjie Yan
Safety Metrics for Semantic Segmentation in Autonomous Driving, Chih-Hong Cheng, Alois Knoll and Hsuan-Cheng Liao

AIT 4: AITest In Practice (25 Aug 11:00 -- 12:30)

Session Chair: Youcheng Sun, Queen's University Belfast, UK

- *SilGAN: Generating driving maneuvers for scenario-based software-in-the-loop testing*, Dhasarathy Parthasarathy and Anton Johansson
- *Building a Reusable Defect Resolution Time Prediction Model Based on a Massive Open-Source Dataset: An Industrial Report*, Murad Mamedov, Ksenia Vorontsova, Elena Treshcheva, and Iosif Itkin
- *An Industrial Workbench for Test Scenario Identification in Autonomous Driving Software*, Qunying Song, Kaige Tan, Per Runeson, and Stefan Persson
- *Ethical AI-Powered Regression Test Selection*, Per Erik Strandberg, Mirgita Frasherri and Eduard Paul Enoiu

AIT 5: Application (26 Aug 11:00 -- 12:30)

Session Chair: Mingyue Jiang, Zhejiang Sci-Tech University, China

- *Quantifying Nondeterminism and Inconsistency in Self-organizing Map Implementations*, Sydur Rahaman, Raina Samuel and Iulian Neamtii
- *Prediction Surface Uncertainty Quantification in Object Detection Models for Autonomous Driving*, Ferhat Ozgur Catak, Tao Yue and Shaukat Ali
- *Validating Gaussian Process Models with Simulation-Based Calibration*, John Mcleod and Fergus Simpson

Technical Program of JCC 2021

JCC 1: 1 Management and Operations (23 Aug, 14:00 -- 15:30)

Session Chair: Fanjing Meng, IBM, China

- *DRAM Failure Prediction in Large-Scale Data Centers*, Fengyuan Yu, Hongzuo Xu, Songlei Jian, Chenlin Huang, Yijie Wang and Zhiyue Wu
- *Proteus: Distributed machine learning task scheduling based on Lyapunov optimization*, Xiang Yongan and Shi Bin
- *Running Scientific Computing Workloads in JointCloud Computing Environment*, Dian Jin, Yan Li and Donggang Cao

JCC 2: Compliance, Security and Privacy (25 Aug, 09:00 -- 10:30)

Session Chair: Monica Vitali, Politecnico di Milano, Italy

- *Architecture of Geo-Distributed Collaborative Computing Data Centers for Public Security*, Xin Wang and Xiaojiong Yang
- *Tora: A Trusted Blockchain Oracle Based on a Decentralized TEE Network*, Lili Chen, Rui Yuan and Yubin Xia
- *MCF-CSA : A Multi-level Collaboration Framework for Cyber Situation Awareness and Information Sharing*, Daochao Huang and Lidong Wang
- *Mathematical Modeling of Transaction Latency on Ethereum*, Jinyan Guo, Zigui Jiang, Li Li and Jing Bian
- *Data decryption permission grant scheme in JointCloud*, Xiang Liangliang, Qin Ying, Shi Peichang, Li Rui and Yang Shangzhi

JCC 3: Multicloud, Fog, and Edge Architectures (25 Aug, 11:00 -- 12:30)

Session Chair: Paul Townend, Umeå University, Sweden

- *An Empirical Study of Inter-cluster Resource Orchestration within Federated Cloud Clusters*, Dominic Lindsay, Gingfung Yeung, Yehia Elkhatib and Peter Garraghan
- *A Cloud-edge Collaborative Architecture for Data-driven Health Condition Monitoring of Machines*, Jianxin Shi
- *MonitDB: a Customizable API for Monitoring Heterogeneous Databases*, Ansar Rafique, Dimitri Van Landuyt and Wouter Joosen
- *A Randomized Greedy Method for AI Applications Component Placement and Resource Selection in Computing Continua*, Hamta Sedghani, Federica Filippini and Danilo Ardagna

Technical Program of Joint Invited Track of Forum on Vision of Intelligent and Service-Oriented Engineering

INV 1: Software Testing (23 Aug, 14:00 -- 15:30)

Session Chair: Hongji Yang, University of Leicester, UK

- *Model-Based Test Modeling and Automation Tool for Intelligent Mobile Apps*, Jerry Gao, Pankaj Hanmant Patil, Dongyu Cao, Chuanqi Tao, San Jose State University, USA
- *Industrial Crowdttesting Platform: Empirical Approach*, Wei-Tek Tsai, Shufeng Hu, and Li Zhang, Beihang University, China

INV 2: Internet-of-Things (23 Aug, 16:00 -- 17:30)

Session Chair: Omer Rana, Cardiff University, UK

- *A Review and Analysis of the Bot-IoT Dataset*, Jared M. Peterson, Joffrey L. Leevy, and Taghi M. Khoshgoftaar, Florida Atlantic University, USA
- *Recursive design for data-driven, self-adaptive IoT services*, Pantelis A. Frangoudis, Matthias Reisinger, and Schahram Dustdar, TU Wien, Austria

INV 3: Security and Privacy (25 Aug, 9:00 -- 10:30)

Session Chair: Jie Xu, The University of Leeds, UK

- *Towards Attribute-Based Transaction Data Access Control for Permissioned Blockchains*, Dijiang Huang, Qiuxiang Dong, and Chun-Jen Chuang, Arizona State University, USA
- *Privacy & Cloud Services: Are We There Yet?* Davit Marikyan, Jose Llanos, Masoud Barati, Gagangeet Aujla, Yinhao Li, Kwabena Adu-Duodu, Sabeen Tahir, Omer Rana, Savvas Papagiannidis, Rajiv Ranjan, and Madeline Carr, Cardiff University, UK

INV 4: AI and Machine Learning (25 Aug, 11:00 - 12:30)

Session Chair: Burak Kantarci, University of Ottawa, Canada

- *Adversarial Machine Learning-driven Fake Task Anticipation in Mobile Crowdsensing Systems*, Zhiyan Chen, Burak Kantarci, University of Ottawa, Canada
- *Speculating on Research Trends in Emotions and Artificial Creativity*, Hongji Yang and Zhongxi Lu, University of Leicester, UK

Technical Programs of Workshops

Workshop On AI And Machine Learning Applications In Industrial Automation

BDS-AI (25 Aug, 11:00 -- 12:30)

Session Chair: Ajinkya Prabhune, SRH University, Germany

- *Using Synthetic Data to Train a Visual Condition Monitoring System for Leak Detection*, Ralf Gitzel and Arzam Kotriwala
- *The role of Machine Learning ensemble models and Commodity price spread models to create sustainable agricultural future for small scale farmers worldwide*, Chandrasekar Vuppapapati, Anitha Ilapakurti, Sharat Kedari, Jaya Shankar Vuppapapati, Santosh Kedari and Raja Vuppapapati
- *Anomaly detection in the time-series data of industrial plants using neural network architectures*, Marcel Dix, Ashish Chouhan, Srishti Ganguly, Sripada Pradhan, Devika Saraswat, Surbhi Agrawal and Ajinkya Prabhune

Workshop On Big Data Service Management, Security And Privacy Preservation

WOBDS 1: Image processing based on deep learning (26 Aug, 9:10 -- 10:30)

Session Chair: Ping Ping, Hohai University, China

- *Improving Representation Learning Incorporating Neighborhood Context and Relational Paths for Knowledge Graph Completion*, Yu Du, Xu Guoyan, Jing Zixu and Li Xing
- *Research on the maximization of influence in social network information dissemination under topic preference*, Guoyan Xu, Tianyi Zhuang, Qirui Zhang, Jerry Zeyu Gao and Jing Huang
- *Keywords-Based Dam Defect Image Caption Generation*, Yong Cheng, Yingchi Mao, Yi Wang, Ping Ping and Longbao Wang

WOBDS 2: Security Risk Control and Monitoring (26 Aug, 11:00 -- 12:30)

Session Chair: Yong Wang, Chongqing University of Posts and Telecommunications, China

- *A reversible data hiding scheme based on multiple residual histogram shifting*, Deyin Fu, Ping Ping, Hongze Zhao, Jie Hao, Zeyu Gao and Salma Abdelgadir Elsharif Abdalla
- *Reversible data hiding based on histogram shifting with sorted pairs of points*, Hongze Zhao, Ping Ping, Deyin Fu, Jie Hao and Zeyu Gao
- *Wavelet embedded attentive Bi-LSTM for Short-term Passenger Flow Forecasting*, Mengli Zhao, Xuejie Zhang and Yanling Jin
- *A Similarity Measurement for Multivariate Time Series Based on Variable Clustering*, Jimin Wang and Chennan Zhang

Technical Program of 2021 IEEE Future Technology Summit

Summit Opening

Moderator: Keith Perry, Window Specialist

24 August, UK Time: 4:30pm-5:00pm, USE PST Time: 8:30am-9:00am; Room A

UK Time	USA PST Time	Topic
4:30pm-4:40pm	8:30am-8:40am	Opening Remarks Dr. MOHAMED ABOUSALEM, Vice President for Research & Innovation, San Jose State University, USA
4:40pm-4:55pm	8:40am-8:55am	Welcome to Future Technology Summit 2021 Lily Mei, Mayor, City of Fremont, California, USA
4:55pm-5:00pm	8:55am-9:00am	Overview of Summit Program IEEE Future Technology Summit Organization Team

Track 1A: Smart City AI and Future IOT Platform

Moderator: Jerry Gao, San Jose State University, USA

24 August, UK Time: 5:00pm-6:30pm, USA PST Time: 9:00am-10:30am; Room A

UK Time	USA PST Time	Topic
5:00pm-5:45pm	9:00am-9:45am	Smart City Project Experience and Lessons Learned: Water Sensitive for Urban Planning and Design Hong-Yuan Lee, National Taiwan University, Taipei
5:45pm-6:30pm	9:45am-10:30am	AI Platform for Tommorrow Vincenzo Piuri, University of Milan, Italy

Track 1B: Smart City AI and Future IOT Platform

Moderator: Hong Zhu, Oxford Brookes University, UK

24 August, UK Time: 6:45pm-7:30pm, USA PST Time: 10:45pm-12:15pm; Room A

UK Time	USA PST Time	Topic
6:45pm-7:30pm	10:45am-11:30am	On Recommendations via Deep and Broad Learning Philip S. Yu, University of Illinois at Chicago, USA
7:30pm-8:15pm	11:30am - 12:15pm	Artificial Intelligence in Semiconductor Industry Ashok K. Sinha, BRI Capital Partners, USA

Track 2: Future AI Technology

Moderator: Jung Huang, Google Inc., USA

24 August, UK Time: 9:00pm-10:30pm, USA PST Time: 1:00pm-2:30pm; Room A

UK Time	USA PST Time	Topic
9:00pm-9:45pm	1:00pm-1:45pm	Recognizing Sound Events Dan Ellis, Google, USA
9:45pm-10:30pm	1:45pm-2:30pm	Explainable Deep Learning for Structured Data Sercan Arik, Research Scientist, Google CLOUD AI, USA

Track 3: Digital Currency and Blockchain*Moderator:* Richard Qua, Chivalry Health Inc. USA,

24 August, UK Time: 5:00pm-7:30pm, USA PST Time: 9:00am-11:30am; Room B

UK Time	USA PST Time	Topic
5:00pm-5:45pm	9:00am-9:45am	Programmable Economics via Crowd Software Wei-Tek Tsai, Beihang University, China
5:45pm-6:30pm	9:45am-10:30am	How CBDCs will Transform the Future of Finance Martin Graham, Blue Jack Associates LLP, USA
6:30pm-6:45pm	10:30am-10:45am	Tea Break
6:45pm-7:30pm	10:45am-11:30am	Payment Distributed Process and Trust Model Bob Blower, Clarency Singapore, Singapore

Track 4: Future AV and Robotics Technology*Moderator:* Wencen Wu, San Jose State University, USA

24 August, UK Time: 9:00pm-10:30pm, USA PST Time: 1:00pm-2:30pm; Room B

UK Time	USA PST Time	Topic
9:00pm-9:45pm	1:00pm-1:45pm	Future Robotics Jane Wu, BRI Capital Inc. and ROBOII, USA
9:45pm-10:30pm	1:45pm-2:30pm	Future LIDAR and IOT Technology for AVs Tianyue Yu, Quanergy Systems Inc., USA

Track 5: Future AV Technology*Moderator:* Wencen Wu, San Jose State University, USA

24 August, UK Time: 9:00pm-10:30pm, USA PST Time: 1:00pm-2:30pm; Room C

UK Time	USA PST Time	Topic
9:00pm-9:45pm	1:00pm-1:45pm	AVL Vision on AV Test Automation Mihai Nica, AVL List GmbH
9:45pm-10:30pm	1:45pm-2:30pm	Into Driverless Technology: from autonomous to driverless driving Jinghao Miao, Baidu Intelligent Driving Group, China

Track 6A,B: Smart City AI and Big Data*Moderator:* Subhankar Dhar, San José State University, USA

24 August, UK Time: 9:00pm-10:30pm, USA PST Time: 1:00pm-2:30pm; Room D

UK Time	USA PST Time	Topic
9:00pm-9:45pm	1:00pm-1:45pm	Smart City Big Data and AI Technology -Challenges and Needs Prasenjit Mitra, The Pennsylvania State University, USA
9:45pm-10:30pm	1:45pm-2:30pm	Analytics, Artificial Intelligence and the Future of Smart Cities Monali Shah, Google, USA
10:30pm-11:00pm	2:30pm-3:00pm	Tea Break
11:00pm-11:45pm	3:00pm-3:45pm	AI in Manufacturing for Smart Cities Krishnendu Chaudhury, Drishti Technologies, USA
11:45pm-12:30am	3:30pm-4:15pm	Wildfire Analysis and Prediction Platform Jerry Gao, Wildfire Machine Learning Team, San Jose State University, USA

Track 7: Smart Medtech and Healthcare*Moderator:* Taghi Khoshgoftaar, Florida Atlantic University, USA

24 August, UK Time: 11:00pm - 12:30am, USA PST Time: 3:00pm-4:30pm; Room A

UK Time	USA PST Time	Topic
11:00pm-11:20am	3:00pm-3:20pm	Topic: Future of healthcare innovation Ella Li, ZGC Capital
11:20pm-11:40pm	3:20pm-3:40pm	The Future of Healthcare Technology: Hype, Hope, and Reality Bill Reichert, Pegasus Tech Ventures, USA
11:40pm-12:00am	3:40pm-4:00pm	Digital Therapeutics (DTx) in eye care and ophthalmology Sina Fateh, Digital Therapeutics Ophthalmology, USA
12:00am-12:30am	4:00pm-4:30pm	Discussion Panel <i>Panellists:</i> Ella Li, Bill Reichert, and Sina Fateh

Track 8A: Smart UAV Technology and Applications*Moderator:* Jia-Ming Liu, Commercialization and Industrial Service Center, ITRI

24 August, Local Time at Taipei: 8:00am - 10:45, USA PST Time: 5:00pm -- 7:45pm; Room E

Local Time	USA PST Time	Topic
8:00am-8:15am	5:00pm-5:15pm	Smart UAV Track Opening Remarks Chris Wang, Chang Jung Christian University, Taipei
8:15am-9:00am	5:15pm-6:00pm	AD Lab—Bridging the gap between engineering capabilities from robotic startup & university teams Darryl M. Anunciado, Action Drone Inc.
9:00am-9:45am	6:00pm-6:45pm	Panel Discussion: UAV and Future Application <i>Panellists:</i> Jia-Ming Liu, James, and Chris
9:45am-10:00am	6:45pm-7:00pm	Tea Break
10:00am-10:45am	7:00pm-7:45pm	High Payload Multi-Rotor Drones, Opportunities and Challenges Wen-Yang Peng, Industrial Technology Research Institute

Track 8B,C: Smart UAV Technology and Applications*Moderator:* Chris Wang, Taiwan Drone Education Cultivation Association, TDECA

25 August. Local Time at Taipei: 8:00am - 11:15, USA PST Time: 5:00pm -- 8:15pm; Room E

Local Time	USA PST Time	Topic
8:00am-8:45am	5:00pm-5:45pm	Smart Drone Technology Issues and Needs Manish Kumar, University of Cincinnati
8:45pm-9:30am	5:45pm-6:30pm	Overview of Taiwan UAV Technology and License Development Ellen Chung, Huake Wisdom Technology Co., Ltd.
9:30am-9:45am	6:30pm-6:45pm	Tea Break
9:45am-10:30am	6:45pm-7:30pm	Brief introduction of the Development of 3D Geographic Information Tony Li, PilotGaea Technology Co., Ltd.
10:30am-11:15am	7:30pm-8:15pm	Deep Learning and Reinforcement Learning for Wildfire Drones Wildfire Drone Team, San Jose State University, USA

IEEE Autonomous Driving AI Test Challenge

Paper Presentation Sessions

AV Test Challenge 1 (26 Aug. 09:00-10:30)

Session Chair: Oum-El-Kheir Aktouf, Grenoble INP, France

- *Efficient and Effective Generation of Test Cases for Pedestrian Detection -- Search-based Software Testing of Baidu Apollo in SVL*, Hamid Ebadi, Mahshid Helali Moghadam, Markus Borg, Gregory Gay, Afonso Fontes and Kasper Socha
- *Addressing the IEEE AV Test Challenge with Scenic and VerifAI*, Kesav Viswanadha, Francis Indaheng, Justin Wong, Edward Kim, Ellen Kalvan, Yash Vardhan Pant, Daniel J. Fremont and Sanjit A. Seshia
- *SALVO: Automated Generation of Diversified Tests for Self-driving Cars from Existing Maps*, Vuong Nguyen, Alessio Gambi and Stephan Huber

AV Test Challenge 2 (26 Aug. 11:00-12:30)

Session Chair: Oum-El-Kheir Aktouf, Grenoble INP, France

- *An Empirical Testing of Autonomous Vehicle Simulator System for Urban Driving*, John Seymour, Dac-Thanh-Chuong Ho and Quang-Hung Luu
- *Critical and Challenging Scenario Generation based on Automatic Action Behaviour Sequence Optimization*, Lorenz Klampfl, David Kaufmann, Florian Klück, Martin Zimmermann and Jianbo Tao
- *A Framework for Scenario-based Virtual Test Generation for Validation of Autonomous Vehicles*, Andrea Piazzoni, Jim Cherian, Mohamed Azhar, Jing Yew Yap, James Lee Wei Shung and Roshan Vijay

Demonstration Schedule

(23 Aug. 15:00-24:50)

UK Time	USA PST Time	Presentation and Demo
15:00 - 17:15	7:00am - 7:15am	Opening Remarks, Organization Team
15:15 - 16:00	7:15am - 8:00am	Keynote Presentation, Lydia Gauerhof, Corporate Research, Robert Bosch GmbH
16:00 - 16:30	8:00am - 8:30am	Tea Break
16:30 - 17:00	8:30am - 9:00am	Team 55 cetransg
17:00 - 17:30	9:00am - 9:30am	Team 87 LIIHWF
17:30 - 18:00	9:30am - 10:00am	Team 84 alexPotag
18:00 - 18:30	10:00am - 10:30pm	Tea Break
18:30 - 19:00	10:30am - 11:00am	Team 106 JuliaEmelianova
19:00 - 19:30	11:00am - 11:30am	Team 97 Katsiaryna-Vyshydkovich
19:30 - 20:00	11:30am - 12:00pm	Team 68 ebadi
20:00 - 21:00	12:00pm - 1:00pm	Lunch Break
21:00 - 21:30	1:00pm - 1:30pm	Team 64 TrackerSB
21:30 - 22:00	1:30pm - 2:00pm	Team 79 vijeshkumarraju
22:00 - 22:30	2:00pm - 2:30pm	Team 108 LKlampfl
22:30 - 23:00	2:30pm - 3:00pm	Tea Break
23:00 - 23:30	3:00pm - 3:30pm	Team 90 raz4
23:30 - 24:00	3:30pm - 4:00pm	Team 105 kesav-v
24:00 - 24:30	4:00pm - 4:30pm	Team 89 ITSEG-MQ
24:30 - 01:00	4:30pm - 5:00pm	Team 110 hd-chuong

NOTE: Award Ceremony is on August 26 from 18:00 - 19:00 (UK Summer Time) (USA PST Time: 10:00am - 11:00am)