



## IEEE CyberScitech/DASC/PICOM/CBDCCom 2022

### IEEE CyberSciTech/PICOM/DASC 2022 and IEEE Smart World Congress 2022- A brief overview of the conferences

After a long wait in difficult times, we are back **in-person**. We had not only one but two fantastic conferences: IEEE CyberSciTech/DASC/PICom/CBDCCom 2022 and IEEE Smart World 2022! We were all together in the beautiful Calabria and Haikou!

### IEEE CyberSciTech/PICOM/DASC 2022- A brief overview of the conference

In Calabria, we had a 4 day conference (September 12- 15) with several keynotes, papers and a lot of fun. Several simultaneous sessions - it was difficult to choose what to take a look at!

Thanks to our hosts from University of Calabria for organizing all this great infrastructure. This year's event was hybrid due to COVID restrictions in some places of the world. So it was an amazing work done by our hosts to allow everyone to participate.

The opening ceremony started on September 12 around 8:00 AM (Falerna, CZ time) and there was a speech from prof. Jianhua Ma. The speech was followed by messages from honorary chairs, general chair (prof. Giancarlo Fortino) and program chairs.

Some data about the event:

- 116 attendees
- 1 panel
- 8 special sessions e workshops
- 6 keynotes
- 44 sessions

Right after the Opening ceremony we started with the first Keynote.

We had several interesting and enticing talks. Each keynote was chosen by one of the conferences, so there was room for everyone to enjoy and learn.

### Keynote 1 - Neoteric Frontiers in Cloud and Edge Computing- Rajkumar Buyya - The University of Melbourne, Australia

Professor Buyya discusses the state of art in Cloud computing as well as he has presented the progress that his lab has made throughout the years. Professor Buyya also discussed the challenges of teaching these new topics. A great way to start the conference!

**Keynote 2 - Energy-Optimized Partial Computation Offloading for Delay-Sensitive Applications in Heterogeneous Mobile Edge Computing - MengChu Zhou, New Jersey Institute of Technology, USA**

Professor Zhou brought us an amazing talk discussing the challenges of decision making in Mobile Edge Computing, specially on Delay Sensitive scenarios such as vehicular networks and drones. This talk discussed the issue of how to offload decisions given energy restrictions. Challenging topic!

**Keynote 3: Side and Covert Channels: the Dr. Jekyll and Mr Hyde of Modern Technologies - Mauro Conti - University of Padua, Italy**

One of the most interesting talks of the conference, professor Conti presented a series of cases demonstrating how far security has come and how it can affect our daily lives. This talk presented several use cases that astonished the audience - such as gathering information from a keyboard using sound and AI.

**Round Table (Moderator Giancarlo Fortino) Networked Cyber-Physical Systems 5.0 (Factories of the future)**

The panel was one of the peaks of the conference and with several members of the Hyper-Intelligence Workgroup. It helped to highlight the importance of the hyper-Intelligence field in the next few years in the promising field of CPS 5.0. It discussed a broad aspect of topics from the concept of Future Factories itself to how Hyper-Intelligence is a key factor in this future. It was an enlightening discussion and at the end we just wanted to have more time with it.

Panel Moderator:

Prof. Giancarlo Fortino

Panel Speakers:

- ✧ Prof. Mengchu Zhou, NJIT, USA
- ✧ Prof. Mauro Conti, University of Padua, Italy
- ✧ A representative from Relatech S.r.l., Italy
- ✧ A representative from NTT Data S.p.A, Italy

**Keynote 4: Consensus Protocols for Connecting Autonomous Vehicles - Maria Pia Fanti, Polytechnic University of Bari, Italy**

Professor Fanti discussed the issue of Blockchain and Smart contracts for Autonomous Vehicles as a way to record information in a reliable manner. Professor Fanti presented us a deep discussion about the several protocols that are able to handle this problem, its strengths and limitations.

**Keynote 5: Explainable Pervasive Intelligence with Self-explaining Agents - Andrea Omicini, Università di Bologna, Italy**

Professor Omicini presented us a brilliant talk on the use of Pervasive Intelligence, specially on how symbolic AI techniques could leverage observable, explainable and accountable Intelligent systems.

**Keynote 6: The path from rigid to soft robotics: Symbiotic Control of Wearable Soft Suits for human Augmentation and Assistance - Lorenzo Masia, Heidelberg University, Germany**

As the last keynote of the conference, professor Masia discussed the challenges on the design of soft-wearable suits. He has also discussed the approaches that his group is using to some of the greatest challenges in the field such as: using biosignals as realtime technique to provide a symbiotic interface between user and exosuit and how it improved from the traditional approaches.

**Closing Ceremony**

Unfortunately things cannot last forever and so our meeting had to come to an end. After 4 days of discussion, presentations and overall fun - we had to close to prepare for a new cycle. But not before celebrating those who exceeded our expectations. We had several amazing papers this year and it was hard to choose the best. This year we awarded not only the best papers of each conference but also student papers.

Also we could not forget the work of all the amazing people that helped the conference on a daily basis - a special thanks was reserved for all the session chairs, workshop chairs, program chairs and the organization in general.

**Student Paper Awards Announcements**

- **PICOM** - "A Deep Reinforcement Learning Based Approach for Intelligent Reconfigurable Surface Elements Selection" authored by Shiming Zan, Yu Pang, Raffaele Gravina, Enling Cao, Ye Li, and Weilin Zang
- **DASC** - "A Framework for Fault Tolerance in RISC-V" authored by Alexander Dörflinger, Benedikt Kleinbeck, Mark Albers, Harald Michalik, and Martin Moya
- **CBDCOM** - "Edge Computing Solutions for Distributed Machine Learning" authored by Fabrizio Marozzo, Alessio Orsino, Domenico Talia, and Paolo Trunfio
- **CyberSciTech** - "OpenWolf: A Serverless Workflow Engine for Native Cloud-Edge Continuum" authored by Christian Sicari, Lorenzo Carnevale, Antonino Galletta, and Massimo Villari

**Best Paper Awards Announcements**

- **PICOM** - "A blockchain based approach for Fog infrastructure management leveraging on Non-Fungible Tokens" authored by Agostino Forestiero, Antonio Francesco Gentile, and Davide Macri

- **DASC** - "A New Dynamically Changing Attack on Review Fraud Systems and a Dynamically Changing Ensemble Defense" authored by Youzhi Zhang, Sayak Chakrabarty, Rui Liu, Andrea Pugliese, and V.S. Subrahmanian
- **CDBCOM** - "Large-Scale Hadoop Model for Mining High Sequence Patterns in Uncertain Databases" authored by Jimmy Ming-Tai Wu, Shuo Liu, and Jerry Chun-Wei Lin
- **CyberSciTech** - "An XAI-based adversarial training approach for cyber-threat detection" authored by Malik Al-Essa, Giuseppina Andresini, Annalisa Appice, and Donato Malerba

As one cycle ends another begins, so we start to plan next year's conference. In 2023, we are going to **Abbhuh Dahbi!**

### IEEE Smart World Congress 2022- A brief overview of the conference

We were in Haikou just last weekend, in a 4 day conference (December 15- 18) with several keynotes, papers and several interesting discussions! The congress included the following conferences: **UIC; ATC; ScalCom; DigitalTwin; PriComp and Metaverse**. Due to Covid-19, this was also a hybrid conference. Thanks for the amazing work done by the team to make it possible.

Thanks to our hosts from the University of Hainan for organizing all this great infrastructure. The opening ceremony started on December 15 around 8:00 AM (Beijing time) and there was a speech from prof. Jianhua Ma (you can also see a welcoming message on the conference site). The speech was followed by messages from honorary chairs, general chairs and program chairs.

Some data about the event:

- Around 300 attendees
- 1 panel
- more than 10 special sessions e workshops
- 9 keynotes
- 78 sessions

There were also a lot of Keynotes! A brief view of the talks (more details on the site):

- Yi Pan - Georgia State University - Automatic and Semi-automatic Translation for Cloud Programming Models
- Abdulmotaleb El Saddik - University of Ottawa - AI-Powered Metaverse
- Zhongdong Wang - University of Exeter- Digitalised Smart Grid Net-Zero Energy Future
- Mischa Dohler - Ericson - 5G, XR and the Metaverse - A Silicon Valley View
- Yongduan Song - Chongqing University - Adaptive Control of Nonlinear Dynamic Systems under Various Constraints
- Hui Li - Xidian University - Research Progress and Development Trend of Privacy Computing
- Lei Zhang - Alibaba Cloud Intelligence - Digital Twins and Intelligent Computing Platform for Smart City and Industry Applications

- Haiqin Xie - Ministry of Science and Technology of China - Exploration on Digital Twin of COSMOPlat
- Milhaela van der Schaar - University of Cambridge - The future of healthcare in the metaverse

During the closing ceremony some amazing papers were awarded Best Paper:

- “Hybrid Cat-Artificial Fish Swarm Based Node Deployment Optimization in Intelligent Transportation IoT “, authored by Lingzhi Yi; Bin Luo; Chenlu Zhu; Xianjun Deng; Yunzhi Xia; Hengshan Wu
- “SKDLog: Self-Knowledge Distillation-based CNN for Abnormal Log Detection“, authored by Ningning Han; Siyang Lu; Dongdong Wang; Mingquan Wang; Xiaoman Tan; Xiang Wei

Next year’s website is already on! You can visit it on: [iee-smart-world-congress.org](http://iee-smart-world-congress.org)! We had an incredible time in Haikou and we expect to have you with us next year at Portsmouth, UK! The paper submission deadlines are already on March 30! If you want to host a workshop the deadline is February 15.

### HITC Awards 2022

This year during the IEEE Smart World Congress 2022, the IEEE HITC awarded several researchers for their contribution to the Hyper-Intelligence field. The awards were divided into several groups: (i) Technical Achievement; (ii) Middle Career Researcher; (iii) Early Career Researcher; (iv) Outstanding PhD Dissertation and (v) Industrial Impact.

#### HITC Award for Excellence (Technical Achievement)

- **Raymond Choo** - The University of Texas at San Antonio: for contributions to secure and reliable hyper-intelligent solution and system designs

#### HITC Award for Excellence (Middle Career Researcher)

- **Deepak Puthal** - Khalifa University, UAE: for contributions to AI-driven security and privacy-aware solutions for the Internet of Thing
- **Celimuge Wu** - The University of Electro-Communications, Japan: for contributions to Intelligent Resource Allocations for Internet of Vehicles
- **Gautam Srivastava** - Brandon University, Canada: for contributions to Hyper-intelligent system security, privacy and trust
- **Claudio Miceli de Farias** - Federal University of Rio de Janeiro, Brazil: for contributions to Data Fusion methods and Data Correlation for IoT networks in Hyper-Intelligent systems .

#### HITC Award for Excellence (Early Career Researcher)

- **Wenjun Li** -Hong Kong Polytechnic University, Hong Kong: for contributions to hyper-intelligent and distributed system security

- **Sahil Garg** - Ultra Communications, Canada: for contributions on hyper-intelligent cyber-physical systems
- **Xiaokang Zhou** - Shiga University, Japan: for contributions to hyper intelligence in cyber-physical-social systems
- **Jiawen Kang** - Guangdong University of Technology, China: for contributions to blockchain and AI for resource management in wireless networks
- **Wen Wu** - Peng Cheng Laboratory, China: for contributions on AI-driven wireless networks
- **Huazhong Liu** - Hainan University, China: for contributions on Tensor-based Cyber-Physical-Social Big Data Intelligence and Efficient Computations

#### **HITC Outstanding PhD Dissertation Award**

- **Ao Guo** - Nagoya University, Japan: for contribution on personal character model in hyper-intelligent humans
- **Shenghao Liu** - Huazhong University of Science and Technology, China: for contribution on recommendation algorithm in hyper-intelligent systems
- **Yinxue Yi** - Chongqing University of Posts and Telecommunications, China: for contribution on information diffusion in social-physical networks
- **Xuyang Jing** - Xidian University, China: for contribution on network measurement and network security analysis

#### **HITC Award for Excellence (Industrial Impact Award)**

- **Pontosense Inc.**: for contributions on wireless intelligent sensing systems for human safety in automobiles

#### **Happy 2023!**

So as this year's conferences came to an end, we would like to take a moment to remember and appreciate all the amazing people that took part and thank you all for your company. It is amazing to be able to be in an in-person conference again! Without the efforts of a huge group of dedicated researchers and attendees these conferences - actually any conference - would be possible. So, we - the IEEE Hyper-Intelligence workgroup - would like to wish you Happy 2023 and we hope to see you next year.

