

IEEE SC Hyper-Intelligence TC Newsletter

- ✧ Conference Organization: CyberSciTech/DASC/PICOM/CBDCOM 2022
- ✧ Special Issues: ACM TOSN, IEEE TCSS, IEEE TAI, Elsevier JSA, IEEE IoTJ, etc.
- ✧ HITC Task Forces: HIS-TF (new), PIB-TF, WISE-TF

Technical Activities: CyberSciTech/DASC/PICOM/CBDCOM 2022, successfully Organized in Italy

After two years of cyber meeting in 2020 and 2021, we had the IEEE CyberSciTech/DASC/PICOM/CBDCOM 2022 physically organized in Calabria, Italy, during Sept. 12-15. The aim of the CyberSciTech Congress is to address the broad challenges in cyber science and technology and to offer a common platform for our fellow scientists, engineers, industrial practitioners, and researchers to present and exchange their latest ideas, discoveries, and implementations (<http://cyber-science.org/2022/>).

We had a four days conference with seven Keynotes, 44 sessions, and 236 presentations. Thanks to our hosts from University of Calabria for organizing all this amazing infrastructure.

Some highlights regarding the event:

The 7th IEEE Cyber Science and Technology Congress (CyberSciTech 2022)

Best Paper Award

"An XAI-based adversarial training approach for cyber-threat detection" authored by Malik Al-Essa, Giuseppina Andresini, Annalisa Appice, and Donato Malerba

Best Student Paper Award

"OpenWolf: A Serverless Workflow Engine for Native Cloud-Edge Continuum" authored by Christian Sicari, Lorenzo Carnevale, Antonino Galletta, and Massimo Villari

The 20th IEEE International Conference on Dependable, Autonomic & Secure Computing (DASC 2022)

Best Paper Award

“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

Best Student Paper Award

“A Framework for Fault Tolerance in RISC-V” authored by Alexander Dörflinger, Benedikt Kleinbeck, Mark Albers, Harald Michalik, and Martin Moya

The 20th IEEE International Conference on Pervasive Intelligence and Computing (PICom 2022)

Best Paper Award

“A blockchain based approach for Fog infrastructure management leveraging on Non-Fungible Tokens” authored by Agostino Forestiero, Antonio Francesco Gentile, and Davide Macrì

Best Student Paper Award

“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

The 8th IEEE International Conference on Cloud and Big Data Computing (CBDCom 2022)

Best Paper Award

“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

Best Student Paper Award

“Edge Computing Solutions for Distributed Machine Learning” authored by Fabrizio Marozzo, Alessio Orsino, Domenico Talia, and Paolo Trunfio

Journals and Special Issues

It is our great honor that our special issue proposals have been approved in several journals:

➤ *ACM Transactions on Sensor Networks*

Special Issue on Distributed and Collaborative Learning Empowered Edge Intelligence in Smart City

Guest editors: Dr. Xiaokang Zhou, Dr. Vincenzo Piuri, Dr. Henry Leung

This special issue aims to gather novel research works related to emerging theories, techniques, and algorithms in deep learning and collaborative learning for edge intelligence enabled system design and application development in modern smart cities.

➤ *IEEE Transactions on Computational Social Systems*

Special Issue on Dark side of the Socio-Cyber World: Media Manipulation, Fake News, and Misinformation

Guest editors: Dr. Gwanggil Jeon, Dr. Xiaochun Cheng, Dr. Abdellah Chehri, Dr. Giancarlo Fortino, Dr. Marcelo Albertini, Dr. Shiping Wen

This special issue aims to seek high-quality and original contributions that advance the concept, methods, and theories by going insight into the dark side of the online information and address the mechanism and strategies to overcome the root cause of fake new through artificial intelligence and deep learning.

➤ *IEEE Transactions on Artificial Intelligence*

Special Issue on Physics-Informed Machine Learning

Guest editors: Dr. Francesco Piccialli, Dr. Maizar Raissi, Dr. Felipe A.C. Viana, Dr. Giancarlo Fortino, Dr. Huimin Lu, Dr. Amir Hussain

This Special Issue aims to present recent results and new research directions in PhysicsInformed Machine Learning.

➤ *Distributed Ledger Technologies: Research and Practice*

Special Issue on Distributed Ledger Technology (DLT) for Beyond 5G Systems

Guest editors: Dr. Andrei Gurtov, Dr. Giancarlo Fortino, Dr. Salil Kanhere, Dr. Madhusanka Liyanage

This Special Issue aims to explore the role of blockchain in the realm of softwarized networks along with the different use cases, opportunities and challenges. The distributed nature of blockchain allows industrial entities and various 5G/6G enabled IoT data users to access and supply IoT data from and to peers respectively thereby omitting the need of centralized operations and management. Moreover, the stakeholders of the 5G ecosystem can verify the veracity of each transaction and thus brings-in accountability, auditability, along with provenance and non-repudiation for every user.

➤ *Journal of Systems Architecture*

Special Issue on Distributed Learning and Blockchain Enabled Infrastructures for Next Generation of Big Data Driven Cyber-Physical Systems

Guest editors: Dr. Xiaokang Zhou, Dr. Giancarlo Fortino, Dr. Carson Leung, Dr. Mohammad Hammoudeh

This Special Issue aims to look for original submissions around all theoretical and application-oriented research of big data driven applications using distributed learning and blockchain technologies. The decentralized architectures, together with the ability to enable secured, trusted and decentralized autonomous ecosystems, revolutionize increasingly centralized Cyber-Physical System for infrastructures and applications, as well as reshaping of traditional data mining and knowledge discovery patterns.

➤ *IEEE IoT Journal*

Special Issue on Smart Blockchain for IoT Trust, Security and Privacy

Guest editors: Dr. Xiaokang Zhou, Dr. Zheng Yan, Dr. Yan Zhang, Dr. Stephen Yau

This Special Issue intends to provide an international forum for researchers to post up-to-date results using AI and blockchain technologies to enhance TSP in modern IoT systems, which will have a great significance and profound impact on AI, blockchain, and IoT TSP, including: Bringing together the greatest research efforts in the field of IoT TSP by employing smart blockchain technology; Exploring new challenges and future generations of smart blockchain algorithms for IoT TSP issues; Addressing the real-world TSP challenges in the present form of smart blockchain enabled IoT systems by utilizing AI techniques to automatic monitor/diagnose/evaluate/solve related issues, to produce a reliable IoT environment with the support of smart blockchain technology.

➤ *Big Data and Cognitive Computing*

Special Issue on Digital Twins for Complex Systems

Guest editors: Dr. Fabrizio Fornari, Dr. Pedro Valderas

This Special Issue aims to gather empirical, experimental, methodological, and theoretical research reporting original and unpublished results contributing to the definition, design, implementation, and application of DT, shedding light on the continuous enhancement of complex systems integrating DTs, and that present possible solutions to open challenges, that proposes software solutions, practical experiences, use-cases, and case studies.

The HITC Members are welcome to provide HI related news that introduce the new findings and latest achievements in their own research fields.

Task Force in HITC

To promote hyper-intelligence related research, we are forming a series of task forces focusing on potential and challenging topics. So far, we basically have three task forces in HITC, as listed below:

➤ Hyper-intelligent Immersive video Streaming Task Force (HIS-TF)

Immersive video is a type of video recording that simultaneously records views in each or multiple directions and allows the user to switch viewing angles during playback. It has a wide range of applications in education, teleconferencing, healthcare, and many other areas. With the aid of the Hyper-Intelligence technologies, the Hyper-intelligent Immersive video Streaming Task Force (HIS-TF) is formed to address the technical challenges of the encoding, transmission, decoding and computing power requirements of hyper-intelligent immersive video systems to deliver immersive intelligent video streaming systems.

PIB-TF Chair: Zhi Liu, The University of Electro-Communications, Japan

➤ Personalized Intelligent Bot Task Force (PIB-TF)

Personalized Intelligent Bot (PIB) is a kind of intelligent robot or digital-bot embedded with personal characteristics and can achieve numerous fantastic applications, including better human-robot interaction and collaboration, the succession of individual's lifestyle, and even can be extended to individual life. The Personalized Intelligent Bot Task Force (PIB-TF) is formed to identify the essentials of PIB, investigate the PIB construction, and develop its applications.

PIB-TF Chair: Ao Guo, Nagoya University, Japan

➤ Wireless Intelligent Sensing Task Force (WISe-TF)

WISe-TF is focused on EM wave-based intelligent sensing technologies, standards and applications. By leveraging the basic principles of wireless sensing, and implementing hyper-intelligent resources and tools to improve wave interaction, signal processing, data analytics, etc., we are able to successfully digitalize, interpret, and monitor complex human behaviors and characteristics. This has critical applications in healthcare, in-cabin vehicle sensing, consumer electronics, and Industry 4.0.

WISe-TF Chair: Alex Qi, Mercku Inc., Canada

Call for Task Force: We are looking for more Hyper-Intelligence related TFs. HITC members are welcome to submit proposals that describing their cutting-edge researches and applications in the emerging Hyper-Intelligence or Super-Intelligence field for TFs. All the accepted TF will be listed in <https://iee-hyperintelligence.org/task-force>.

The hit number of HITC webpage has reached over 56,000 so far, which has shown rapidly increasing interests from many people. We would like to extend our gratitude to all HITC members, for their invaluable help and productive advice in forming and organizing Hyper-Intelligence Technical Committee. Please kindly let us know if you have further suggestions to make HITC play one of leading roles in this emerging area.

We sincerely welcome more people to join the new TC for collaborative effort and exploration to the novel but challenging field in Hyper-Intelligence. Please feel free to promote, and invite your colleagues and friends who are interested in it to apply joining HITC by https://iee-hyperintelligence.org/join_us.

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