IEEE SC Hyper-Intelligence TC Newsletter

- ✧ HITC Membership: 134 members by the end of June
- ✧ HITC Administration Team: 15 members
- ✧ Conference Organization: Ten IEEE International Conferences in 2021
- ✧ Special Issues: DIEFIoT in Elsevier JPDC, DLBD-BADH in IEEE/ACM TCBB, etc.
- ✧ Hyper-Intelligence Related News
- ✧ HITC Task Forces: PIB and WISe

HITC Membership Enrollment

We are very pleased to announce that, by the end of June, 2021, the Hyper-Intelligence Technical Committee (HITC) in IEEE Systems Council (SC) has drawn 134 members, including 21 female scientists, from 27 countries all over the world (1% from Africa, 26% from America, 38% from Asia, 25% from Europe, and 10% from Oceania). So far, we have 11 distinguished scientists in Advisory Board, 46 excellent researchers (including ten female scientists) in Technical Board, and increasing passionate scholars in Hyper-Intelligence or Super-Intelligence related fields to become new members. See the detailed member information at https://ieee-hyperintelligence.org/member.

Introduction to HITC Administration Team

We are honored to introduce the initially established HITC administration team, and very grateful for their hard work and strong support to the founding of HITC. They are:

Committee Chairs: Prof. Jianhua Ma, Hosei University, Japan, Prof. Laurence T. Yang, St. Francis Xavier University, Canada, Prof. Giancarlo Fortino, University of Calabria, Italy, Prof. Flavia C. Delicato, Fluminense Federal University, Brazil;

Planning Coordinators: Prof. Bernady O. Apduhan, Kyushu Sangyo University, Japan, Prof. Kevin I-Kai Wang, The University of Auckland, New Zealand, Prof. Anna Kobusińska, Poznan University of Technology, Poland, Prof. Zakirul Alam Bhuiyan, Fordham University, United States, Prof. Paulo Pires, Fluminense Federal University, Brazil;

Newsletter Editors: Prof. Xiaokang Zhou, Shiga University, Japan, Prof. Wenjia Li, New York Institute of Technology, United States, Prof. Claudio Miceli de Farias, Federal University of Rio de Janeiro, Brazil, Prof. Antonio Guerrieri, ICAR-CNR, Italy;

Liaison Officer: Prof. Zhi Liu, The University of Electro-Communications, Japan;

TC Secretary: Dr. Ao Guo, Nagoya University, Japan.

Technical Activities: International Conference Organization

We are organizing a variety of activities related to the theme and different aspects of hyper-intelligence. A series of IEEE international conferences that HITC is actively involved in this year include:

The 18th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2021),
The 19th IEEE International Conference on Pervasive Intelligence and Computing (PICom 2021),
The 7th IEEE International Conference on Internet of People (IoP 2021),
The 5th IEEE International Conference on Smart City Innovations (SCI 2021),
The 7th IEEE International Conference on Cloud and Big Data Computing (CBDCom 2021),
The 6th IEEE Cyber Science and Technology Congress (CyberSciTech 2021),
The 14th IEEE International Conf. on Cyber, Physical and Social Computing (CPSCom 2021),
The 7th IEEE International Conference on Smart Data (SmartData 2021),
The 6th IEEE Cyber Science and Technology Congress (CyberSciTech 2021),
The 7th IEEE Smart World Congress (SmartWorld 2021), and
The 9th IEEE Cybermatics Congress (Cybermatics 2021)

During these conferences, several famous scientists and distinguished researchers will be invited to give keynote speeches, to share their latest technical achievements, specific working experience, distinctive life perception, regarding key aspects closely related to hyper-intelligence in both academic and industrial fields.

Journals and Special Issues

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

➢ *Journal of Parallel and Distributed Computing*
   Special Issue on Distributed Intelligence at the Edge for the Future Internet of Things
   Guest editors: Dr. Andrzej Goscinski, Dr Flavia C. Delicato, Dr. Anna Kobusińska, Dr. Gautam Srivastava, Dr. Giancarlo Fortino

This special issue aims to call for the presentation of the most recent outcome of research of distributed intelligence with smart edge devices, which is enabled based on the use of AI, machine learning, neural network, and data analytic techniques in a new inter-disciplinary field.

➢ *IEEE/ACM Transactions on Computational Biology and Bioinformatics*
   Special Issue on Deep Learning-Empowered Big Data Analytics in Biomedical Applications and Digital Healthcare

Guest editors: Dr. Xiaokang Zhou, Dr. Carson Leung, Dr. Kevin Wang, Dr. Giancarlo Fortino

This special issue aims to invite a wide range of researchers, both from the computer science community and the biomedical research groups, to submit up-to-date results in cutting-edge deep learning and big data analysis technologies, which will bring significant impacts on data mining, machine learning, computer vision, biomedical research, healthcare engineering, etc., and call for transdisciplinary collaboration and cross-field exploration in the emerging hyper world.

➢ *Sensors Journal*

   Special Issue on AI and Big Data Analytics in Sensors and Applications
   Guest editors: Dr. Ke Yan, Dr Yang Xu, Dr. Fuhua Lin, Dr. Qun Jin

This Special Issue intends to provide an international forum for researchers to showcase the up-to-date results on AI, machine learning, big data and cyber security technologies in the fields of sensors. Recent progress and future directions of AI in sensors and applications will be investigated. This Special Issue also intends to bring together impressive efforts in computer science and various engineering fields in relation to finding common and cross-discipline research topics.

➢ *Sensors Journal*

   Special Issue on Security and Information Flow in Intelligent Systems for the Internet of Things
   Guest editors: Dr. Dawid Połap, Dr. Gautam Srivastava, Dr. Marta Wlodarczyk-Sielicka

This Special Issue focuses on the operation of sensors on the Internet of Things, with particular emphasis on their storage, processing, and protection when sending or sharing information. The main idea behind this Special Issue is to take up the topic of security and information processing of data obtained by these sensors, which are used in solutions in intelligent homes/cities or even in the Internet of Medical Things.

➢ *Sensors Journal*

   Special Issue on Pervasive Intelligence for Sensor and Cyber Information
   Guest editors: Dr. Henry Leung, Dr. Flavia C. Delicato, Dr. Fuhua Lin, Dr. Paulo F. Pires

This Special Issue aims to highlight the latest research results and advances focused on how to enable pervasive intelligence in everyday devices to learn and dynamically support human preferences and lifestyles at home, at work, and on the move. We are also interested in how to tackle challenges such as human control, accessibility, safety, and trust associated with the cyberspace.

Hyper-Intelligence News

Some HI related news are posted on the HITC website.

➢ *Using AI to prevent harm caused by immunotherapy*
Researchers at Case Western Reserve University, using artificial intelligence (AI) to analyze simple tissue scans, state that they have discovered biomarkers that could tell doctors which lung cancer patients might actually get worse from immunotherapy.

➢ *AI debating system able to compete with expert human debaters*
IBM has developed an artificial intelligence-based system designed to engage in debates with humans. In their paper published in the journal Nature, the team members describe their system and how well it performed when pitted against human opponents.

➢ *IBM quantum computing roadmap envisions applications running 100 times faster*
According to IBM's quantum hardware roadmap, the company expects to achieve 100 qubits (the measure of a quantum computer's processing power) this year, 400 qubits next year, and 1,000 qubits by 2023.

➢ *AI and Life Sciences: Has protein folding been solved?*
Amongst the bad news that took up a lot of headlines last year, there was one story at the end of last year that caused a lot of excitement in the life sciences sector. DeepMind's Artificial Intelligence – AlphaFold 2 – appears to have solved the conundrum of protein folding.

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 two task forces in HITC, as listed below:

➢ 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://ieee-hyperintelligence.org/task-force.

The hit number of HITC webpage has reached over *13,000* 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://ieee-hyperintelligence.org/join_us.

HITC Newsletter Editors
Dr. Xiaokang Zhou, *Shiga University, Japan*
Dr. Wenjia Li, *New York Institute of Technology, United States*
Dr. Claudio Miceli de Farias, *Federal University of Rio de Janeiro, Brazil*
Dr. Antonio Guerrieri, *ICAR-CNR, Italy*