



International Conference on
Green and Human Information Technology 2022

ICGHIT 2022

Proceedings



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Message from General Co-Chairs of ICGHIT 2022



Prof. Kyutae Lee
General Co-Chair
Kongju National University, Korea



Prof. Hyunsik Ahn
General Co-Chair
Tongmyong University, Korea

Welcome to the International Conference on Green and Human Information Technology 2022 (ICGHIT 2022)!

We are very pleased to hold ICGHIT 2022 from January 19 to 21, 2022 at the Ramada City Hotel, Jeju island, Korea. We are very glad to hold the conference successfully despite concerns for the spread of Covid-19. I would like to thank all the participants who take part in the conference locally and remotely at abroad. ICGHIT was started to provide good chances for technical exchanges and advancements, mutual cooperation among the participants, and local development of the country hosting the conference. The goal of ICGHIT is to form a platform to seek the advancement of human related IT in various view points of research. The philosophy of the conference is the achievement of the dream of IT that can improve human welfare and happiness. Along with the recent issues about the fourth industry revolution, global interest in deep learning, virtual reality, IoT and other advanced areas is increasing. This conference seeks to interact internationally with these changing technical advances. This year's conference theme is "Emerging AI+X technology." The latest technologies of AI+X are already pervading our daily life regardless of our recognition including deep learning, VR-AR, IoT, digital twin, etc. The conference attendees will have an opportunity to discuss new results theoretical and practical results on the topics.

In ICGHIT 2022, more than 140 scientists from 11 different countries (Korea, China, India, Japan, Morocco, Indonesia, Pakistan, Philippine, Spain, United Kingdom, Vietnam, etc.) will present their excellent research results in multiple sessions. The committee prepared two plenary talks, multiple technical sessions consisting of oral and poster presentations. We have received 83 paper submissions, which were peer-reviewed by experts in the area of the paper's subject. The selected papers, 59 high quality research papers, consist of 45 oral presentation papers (Korea: 23, other

countries: 22) and 14 poster presentation papers. During this conference, the presented papers will be evaluated by session chairs and program committee. Then, some papers will be selected for publication in excellent international journals. Also, due to the social changes caused by Covid-19, we are taking a new way which it has never experienced yet. Especially, in order to overcome the obstacles caused by the pandemic, the conference is being held on a mixed way to consist of both live and recorded online presentations.

For preparing ICGHIT 2022, the supports and helps of many people and multiple institutions were required. First, we would like to thank sponsors: The Institute of Electronics and Information Engineers (IEIE) and Green Human IT Association (GHIT).

We specially appreciate the devotion of Prof. Duckki Lee, the organizing chair. We also appreciate all the committee members who have been responsible and fulfilled successfully on their fields, and reviewers who carried out the careful evaluation of the submitted papers. Above all, we would like to express our deep appreciation to all authors, participants and speakers despite the matter of the virus.

We hope to hold the next ICGHIT face-to-face with you next year in wonderful place without the virus. We wish you to have a great time during your stay in this beautiful island.

Thank you!

Welcome to ICGHIT 2022



Prof. Seong Oun Hwang
International Advisory Committee
President of IEIE Computer Information Society
Gachon University, Korea

On behalf of all members of the IEIE CIS (Computer Information Society), I welcome you to the ICGHIT 2022 conference in Jeju, Korea.

First of all, I would like to thank all speakers, participants, professors, researchers and students from around the world. I would also like to thank Prof. Kyu-tae Lee, Prof. Hyun-sik Ahn, General co-chairs, Prof. Duckki Lee, Organizing Chair and all the other ICGHIT 2022 committee members. The ICGHIT was first launched as a workshop to encourage friendship and partnership between Korean IEIE CIS members and researchers and professors from other countries. It was very small when launched, but has evolved into one of the major international conferences for the development of green technology and human-related information technology.

The IEIE is the largest institute of electronics and information engineering in Korea. We have hosted various workshops and seminars for professors, researchers and students in IT-related fields. We have also developed a vision to encourage international relations. As a sponsor, we will continue to support the ICGHIT which pursues the philosophy of green and human information technology to enhance human well-being and happiness.

Once again, I would like to express my sincere gratitude to all participants and speakers. We hope you have a great experience during the conference in sharing new and exciting results.

Thank you!

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