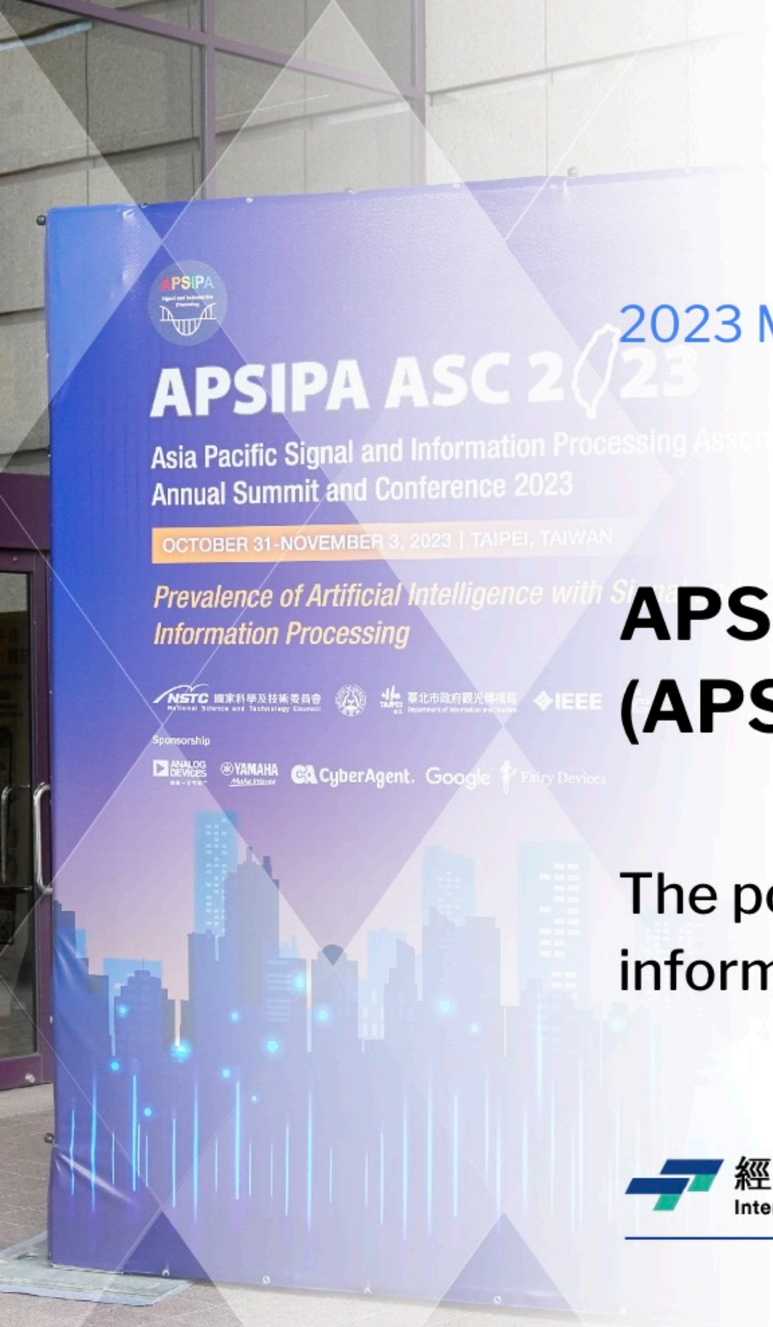


APSIPA Annual Summit and Conference (APSIPA ASC)

The popularization of artificial intelligence in signal and information processing

經濟部國際貿易署 International Trade Administration

APSIPA ASC 2023

Conference Period: October 31,- November 3, 2023
Venue: Taipei International Convention Center

APSIPA

APSIPA ASC 2023

Asia Pacific Signal and Information Processing Association
Annual Summit and Conference 2023

OCTOBER 31-NOVEMBER 3, 2023 | TAIPEI, TAIWAN

Prevalence of Artificial Intelligence with Signal and Information Processing

History of Conference

- The Asia-Pacific Signal and Information Processing Association (APSIPA) is the world's second largest association in the field of engineering. Founded in 2009, APSIPA is dedicated to serving as a bridge between academia and engineering regarding education and R&D.
- In addition to focusing on technological applications, APSIPA continuously strives to increase efficiency, reduce carbon emissions and losses, and promote sustainable development, contributing to environmental sustainability and social governance.
- To more effectively promote research and education in the field, APSIPA holds biennial conferences in various countries. These conferences serve as major international conferences for the field of signal and information processing.

APSIPA ASC 2023

- Marking the 15th occasion of the annual conference, ASC 2023 was held at the Taipei International Convention Center from Tuesday, October 31, to Friday, November 3, 2023.
- This conference was hosted by the APSIPA Taiwan Chapter. After five years of hard work and preparation, APSIPA Taiwan stood out from among the countries in the Asia-Pacific region and won the bid in 2020 to host the 2023 conference.
- ASC 2023 attracted 464 foreign and domestic scholars and experts from 19 countries, including Japan, South Korea, Malaysia, and Vietnam, along with five organizations working in related fields.

About the Organizer

Organized by the APSIPA Taiwan Chapter

APSIPA authorized the APSIPA Taiwan Chapter to organize this conference. It was co-chaired by Dr. Jing-Ming Guo from the National Taiwan University of Science and Technology, Dr. Gwo-Giun Lee from the National Cheng Kung University, Dr. Shih-Fu Chang from Columbia University, and Dr. Anthony Kuh from the University of Hawaii at Manoa, U.S.A.

APSIPA Taiwan Chapter

The APSIPA Taiwan Chapter consists of members who are primarily experts, scholars, and industry members in the field of signal and information processing.

Executed by E&A Professional Conference Organizer Co., Ltd.

Introduction

Established in 2018, E&A Professional Conference Organizer is a well-known conference consultancy in Taiwan.

In-depth experience with executing conferences and exhibitions

- The services offered by the company cover administrative duties for societies and associations as well as planning for conferences, exhibitions, and other types of events. The company serves as a key collaborative partner with various guilds, societies, and associations.
- E&A holds extensive experience in the management of events. Since 2011, it has been assisting with organizing many conventions and exhibitions. In the past 5 years, it has organized more than 10 large international conferences per year, all of which have received all-around positive reviews.

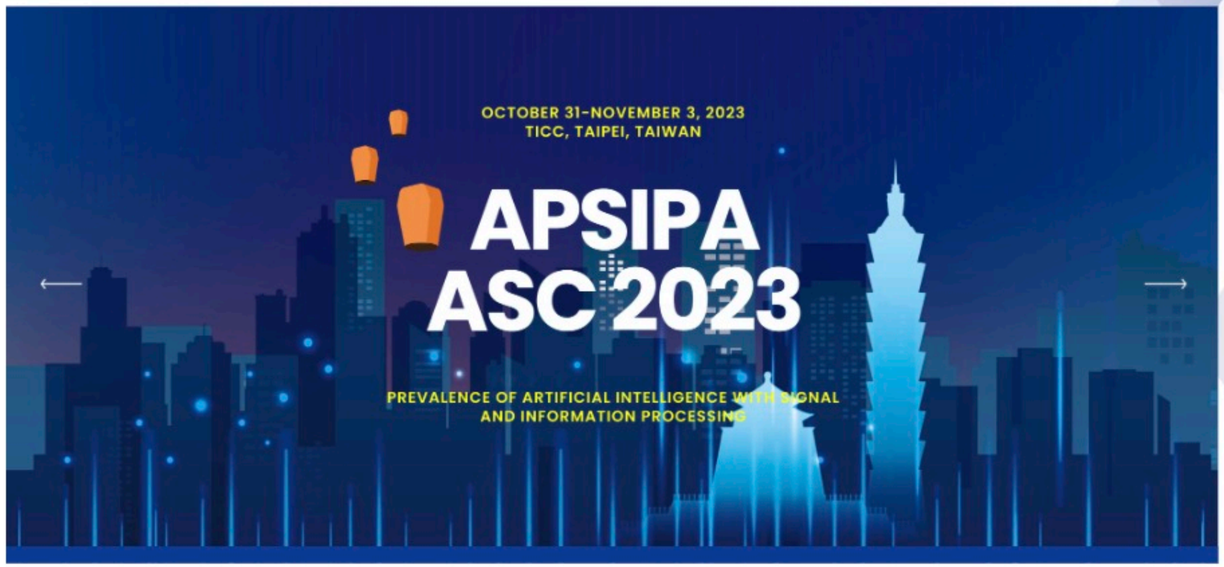
Conference Theme: Prevalence of artificial intelligence in signal and information processing

Background

In an era of rapid global information technology development, signal processing plays an indispensable role in many key fields of application, fast becoming a core field in technological development.

Theme

The 2023 conference theme is Prevalence of Artificial Intelligence in Signal and Information Processing. Revolving around artificial intelligence, new research and applications for signal processing were explored.



Sustainable Implications

In the digital era, the development of signal and information processing technologies has increased the efficiency of various industrial activities. However, it has also been posing challenges for energy conservation. In addition, how AI may facilitate technology optimization, talent cultivation, and reduce energy consumption is another aspect explored in this field.

Sustainability-related topics discussed at this conference focused on the following fields:

· In education, innovative applications, such as teaching materials and resources, that can be tailored to students.

· In healthcare, the application of signal collection, analysis, and processing technologies can enhance the quality of diagnosis and reduce misdiagnoses.

· In the supply chain, applications of data analysis that can improve the efficiency of order selection, shipping, and storage, thereby reducing energy and resource consumption.

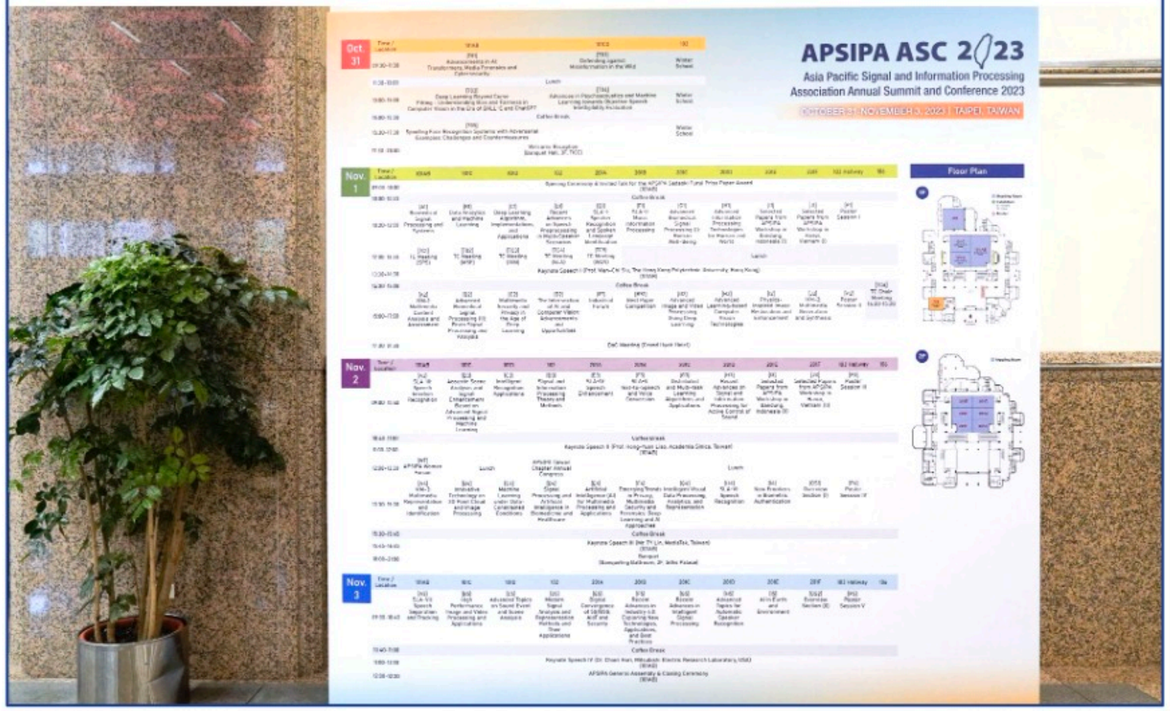
Conference Vision and Goals

Emphasis on Sustainability and Demonstration of Global Impact by the Chairs

- APSIPA Chair Tatsuya Kawahara (left in the photo above) and ASC Co-chair Dr. Jing-Ming Guo of the National Taiwan University of Science and Technology (right in the photo above) identified sustainable values and declared the conference's emphasis on the theme of sustainability.
- The declaration of sustainability at this conference encourages serious consideration of this concept in the field of signal processing, which will in turn influence the direction of research and applications in the field as a whole.

To Implement Sustainability Values and Cultivate Talent

- To spur advancements and promote sustainability goals in signal and information technology through interdisciplinary applications.
- To proactively cultivate talent and establish an innovative sustainability platform for the signal and information industry.
- To present Taiwan's professional capacity to the international community by showcasing its contributions in industry, academia, and research.



Materiality in Signal and Information Processing

1

Data privacy rights and freedom of speech

The signal and information processing industry unavoidably collects client information, including personal data, message content, and behaviors. Thus, issues surrounding information privacy and freedom of speech are of great concern.

2

Information security

Because the signal and information processing industry collects massive amounts of client information, the protection of such data and information will affect whether these organizations can retain their credibility in the long term while simultaneously maintaining stable revenue and organizational development.

3

System risk management

Climate change has increased the frequency of extreme weather events, which pose threats not only to signal and information processing infrastructure but also to society and related systems. Effective risk prediction and management are key components to sustainable organizational management.

Sustainable Development Goals for the Medical Innovation

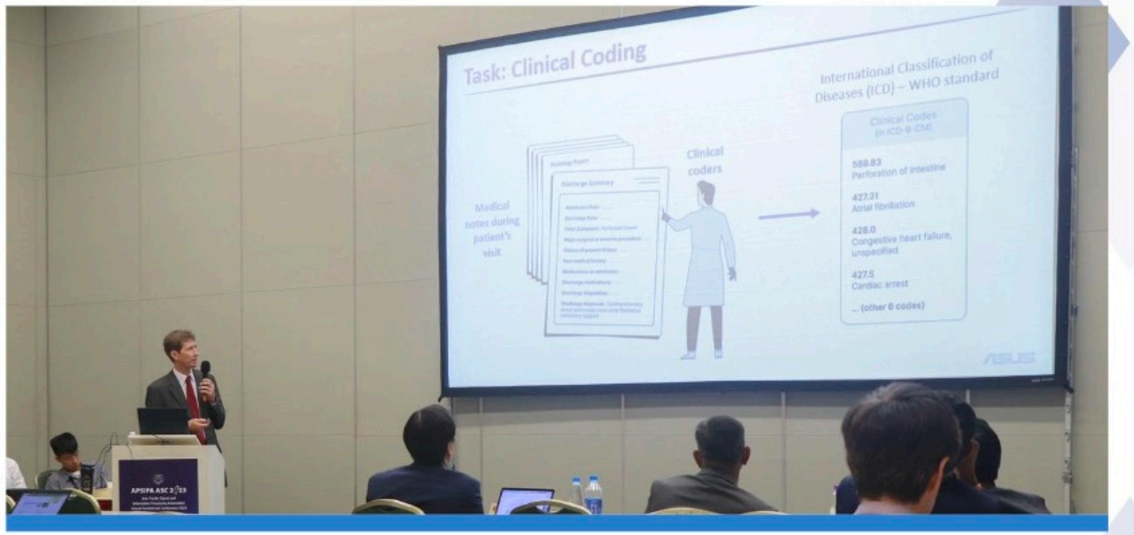
Image source: United Nations

Six Sustainability Highlights and Actions

01 Explore technological applications for the health and well-being of humankind

The integration of signal technology with medical treatment can improve the quality of physician diagnoses, and even accelerate the development of drugs and the advancement of medical technologies. This topic has been making major contributions to human welfare. In this symposium, this topic was explored in depth in the following agenda:

- Advanced Biomedical Signal Processing (I): Human Well-Being
- Advanced Information Processing Technologies for Humans and the World
- Signal Processing and Artificial Intelligence in Biomedicine and Healthcare

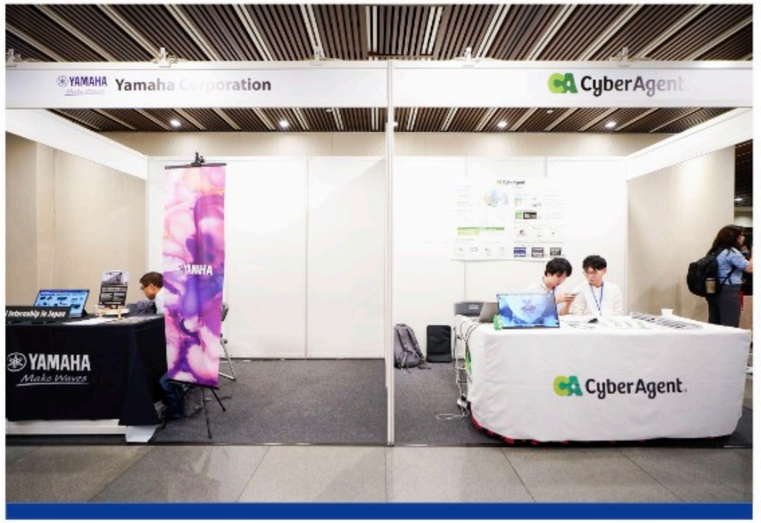


02 Focus on local issues in Asia for technological applications

This conference attaches great importance to the development and local application issuess of the signal field in various parts of Asia. Thus, agendas were based on regions. For topics related to Asia and Southeast Asia, papers were selected from APSIPA conferences in Bandung, Indonesia, and Hanoi, Vietnam.

03 Plan demonstrations by companies to improve industry-academia exchanges

- ASC 2023 specially invited companies from both Taiwan and abroad to showcase their latest devices and technologies, providing a platform for industry players to demonstrate their capacities and creating opportunities for industry-academia dialogue.
- Through this design, the conference presented Taiwan's signal processing capacity, while facilitating new opportunities for collaboration and strengthening the link between academia and practical application.
- The conference featured exhibitions from five companies: ADI from Taiwan; Yamaha Corporation, CyberAgent, and Fairy Devices Inc. from Japan; and Google LLC from the United States.
- Among them, Yamaha Corporation and CyberAgent manned booths at the conference and interacted with conference attendees.



04 Proactively cultivate academic talent for sustainable development

Planning a forum for women researchers

The organizers of ASC 2023 were keenly aware of the gender gap in this field. As a result, they specifically planned a forum to recognize the academic contributions of women researchers and encourage young women to enter this field.

Encouraging young scholars to publish papers

ASC 2023 offered a platform for academic exchange while encouraging young scholars and researchers to actively publish papers. Concurrently, this conference provided opportunities for dialogue between young scholars and top international experts to broaden perspectives.

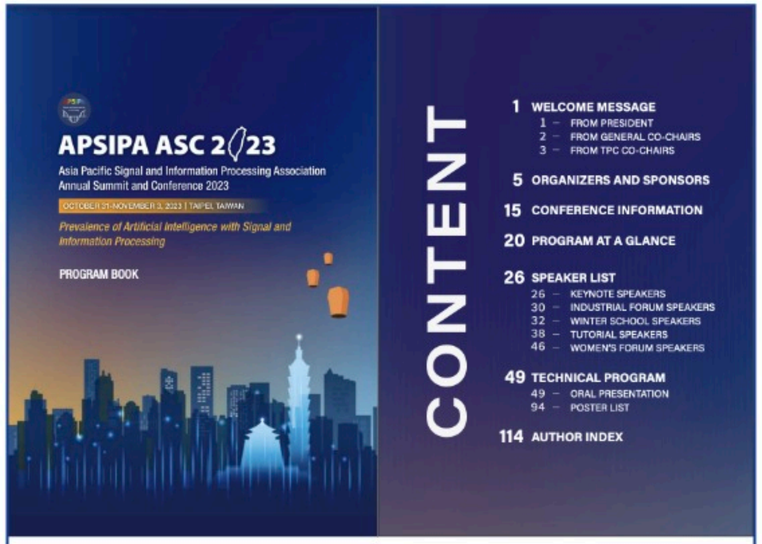
Setting up a poster presentation exhibition

By publicly exhibiting their work and opening opportunities for exchange, the poster exhibition sought to inspire young researchers to continue delving even deeper into their studies, injecting new energy into the sustainable development of this academic field.

05 Use of electronic displays in lieu of printed materials to reduce waste generated by the event

This conference used electronic methods to convey information and substantially reduce non-reusable waste. In particular, the following measures were taken:

The conference adopted online registration and onsite QR code scanning for check-in processes. These measures eliminated the use of paper for print materials, making the process seamless.



Research papers and conference manuals were not printed; instead they were provided in electronic form, substantially reducing waste from large-scale printing.

Business card lanyards are difficult to be completely recycled. This conference employed recyclable materials to reduce waste.

06 Implement a carbon emissions reduction plan complying with venue measures

Organizers selected the Taipei International Convention Center to serve as their venue due to its proven awareness on sustainability, further demonstrating their commitment to environmental sustainability.

well utilized. Participants were encouraged to bring their own water receptacles to reduce the use of disposable single-use paper cups.

Existing resources at the site were used to maximize the effectiveness of the outdoor screens. A projection backboard was also employed to reduce the use of printed materials.

In compliance with the venue's air conditioning standards, a temperature of 26°C was maintained to reduce energy consumption.

Disclosure of Carbon Reduction Achievements

Summary of Carbon Reduction Results

APSIPA ASC 2023 calculated the amount of its carbon emissions by using the carbon emissions calculator from the MEET TAIWAN. This data not only summarized the achievements of this conference, it can also be used as a reference for future sustainable conferences.

Item	Unit/person	Total Reduction of Carbon Emissions
Total Reduction of Carbon Emissions	Avoided the printing of 600 manuals (each consisting of approximately 200 pages requiring 100 pieces of paper)	1,848 $kgCO_2e$

Data Collection and Disclosure Explanation

This report has been compiled according to SIRCO principles (Sustainability, Impact, Resilience, Collaboration, and Ownership) of the Taiwan MICE Sustainability White Paper along with the following supplementary indicators and supporting data:

· GRI Standards

· SASB Standards

Report Compilation Process

The information presented in this report was collected and compiled by APSIPA ASC 2023 and the MEET TAIWAN Program executive team. The reporting period was mainly from June 1, 2023, to November 30, 2023, with a portion of information including results and records of previous exhibitions before 2023.