



**IEEE Taipei Section**

**Annual Report 2023**

**Pei-Wen Li**  
**Chair (2023/2024)**

## Suggested Section Report Format

### PART A - SECTION SUMMARY

#### A.1 Executive Summary

- Section Executive Committee Member List

##### **Section Officer (2023-2025)**

###### **Chair**

Prof. Pei-Wen Li

Email: pwli@nycu.edu.tw

###### **Vice Chair**

Prof. Li-Wei Ko

Email: lwko@nycu.edu.tw

###### **Secretary**

Prof. Bo-Cheng Lai

Email: bclai@nycu.edu.tw

###### **Treasurer**

Prof. I-Fang Chung

Email: ifchung@nycu.edu.tw

###### **Membership Development**

Prof. Yen-Lin Chen

Email: ylchen@ntut.edu.tw

###### **Professional Activities**

Prof. Ai-Chun Pang

Email: acpang@csie.ntu.edu.tw

###### **Student Activities**

Prof. Tien-Kan Chung

Email: tkchung@nycu.edu.tw

###### **Educational Activities**

Prof. Yu-Chih Huang

Email: jerryhuang@nctu.edu.tw

###### **Women in Engineering**

Prof. Hsiao-Wen Zan

Email: hsiaowen@mail.nctu.edu.tw

###### **Industry Relations Coordinator**

Prof. Bor-Sung Liang (MediaTek)

Email: bs.liang@mediatek.com

Prof. Yi-Pai Huang (Apple)

Email: yh492@g2.nctu.edu.tw

###### **Conference Activities**

Prof. E-Ray Hsieh

Email: erayhsieh@cc.ncu.edu.tw

###### **Webmaster**

Prof. Kun-Chih Chen

Email: kcchen@nycu.edu.tw

- Section Highlights
  - Taipei Section has 2 newly elevated IEEE Fellow of 2023.
  - Taipei Section organized 2023 Lifetime Achievement Award, Outstanding Chapter/Student Chapter Award, Best PhD Dissertation Award, and Best Master Thesis Award.
- Major Events (International, National)
  - **Sponsor**

Category	Meeting	Date
Administrative	Sectional Officer Meeting	2023.06.05
	Section Executive Committee Meeting	2023.01.13, 2023.08.02

➤ **Co-sponsor**

Category	Meeting	Date
	19TH TAIWAN MICROMOUSE AND INTELLIGENT ROBOT CONTEST (E25)	2023.08.20
	The 6th IEEE International Future Energy Electronics Conference (IFEEC 2023)_(IE13)	2023.11.20-23
	The Optics & Photonics Taiwan, International Conference-Annual Meeting of Taiwan Photonics Society, 2023(PHO36)	2023.12.01-03

- **Major Chapter Activities**
  - Encourage members to participate in IEEE activities.
- **Awards**
  - 2023 Lifetime Achievement Award
  - 2023 Outstanding Chapter Award
  - 2023 Outstanding Student Branch/Chapter Award
  - 2023 Best PhD Dissertation Award and 2023 Best Master Thesis Award.

## A.2 Financial Report

- Summary (as per submitted onNextGen)
- Any other financial activities

The financial status of this Section is comfortable for supporting those planned programs. Some of the chapters have contributed a reasonable percentage of their income to this Section. This allows the Section to maintain the routine functions and to hold more conferences. We also sponsored more student activities than before.

## PART B - ORGANIZATIONAL ACTIVITIES

### B.1 Membership Development Activities

- Total number of active members in the past 4 years.

IEEE Grade	2020 Members	2021 Members	2022 Members	2023 Members
Affiliate	47	46		
Associate	49	49	40	38
Fellow	90	96	87	83
Graduate Student	386	282	386	406
Life Fellow	38	38	42	43
Life Member	32	32	33	32
Life Senior	18	18	18	23
Member	1648	1628	1589	1532
Senior Member	395	388	407	448
Student	149	111	191	202
<b>Total</b>	<b>2867</b>	<b>2688</b>	<b>2793</b>	<b>2807</b>

- Summary and evidence of work done to improve the value of membership, which leads to retention and growth of members
  - We keep recruiting new members and plan activities this and next years, including Rendering Awards (Outstanding Chapter Award and Outstanding Student Branch/ Chapter Award).

### B.2 Chapter Activities

- Total number of Chapters in the Section: 35
  - Chapter Name: Antennas and Propagation Society Taipei Chapter (AP03)**  
**Chapter Chair:** Ding-Bing Lin  
**Title and Affiliation:** Professor, Department of Electronic and Computer Engineering, National Taiwan University of Science and Technology  
**Email:** dblin@mail.ntust.edu.tw
  - Chapter Name: Broadcast Technology Society Taipei Chapter (BT02)**  
**Chapter Chair:** Shih-Chia Huang  
**Title and Affiliation:** Professor, Department of Electronic Engineering, National Taipei University of Technology  
**Email:** schuang@ntut.edu.tw
  - Chapter Name: Computer Society Taipei Chapter (C16)**  
**Chapter Chair:** Yuh-Jye Lee  
**Title and Affiliation:** Research Fellow, Institute of Information Science, Academia Sinica  
**Email:** yuh-jye@citi.sinica.edu.tw
  - Chapter Name: Circuits and Systems Society Taipei Chapter (CAS04)**

- Chapter Chair:** Bor-Sung Liang  
**Title and Affiliation:** Senior Director, Corporate Strategy & Strategic Technology, MediaTek  
**Email:** bs.liang@mediatek.com
5. **Chapter Name: Consumer Technology Society Taipei Chapter (CTSoc08)**  
**Chapter Chair:** Pei-Jun Lee  
**Title and Affiliation:** Professor, Department of Electronic and Computer Engineering, National Taiwan University of Science and Technology  
**Email:** pjlee@mail.ntust.edu.tw
  6. **Chapter Name: Council on Electronic Design Automation Taipei Chapter (CEDA44)**  
**Chapter Chair:** Ing-Chao Lin  
**Title and Affiliation:** Professor, Department of Computer Science and Information Engineering, National Cheng Kung University  
**Email:** iclin@mail.ncku.edu.tw
  7. **Chapter Name: Computational Intelligence Society Taipei Chapter (CIS11)**  
**Chapter Chair:** I-Fang Chung  
**Title and Affiliation:** Professor, Institute of Bioinformatics Informatics, National Yang Ming Chiao Tung University  
**Email:** ifchung@nycu.edu.tw
  8. **Chapter Name: Communications Society Taipei Chapter (COM19)**  
**Chapter Chair:** Min-Kuan Chang  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Chung Hsing University  
**Email:** minkuanc@nchu.edu.tw
  9. **Chapter Name: Components, Packaging, and Manufacturing Technology Society Taipei Chapter (CPMT21)**  
**Chapter Chair:** Shen-Li Fu  
**Title and Affiliation:** Professor, Department of Electronic Engineering, I-Shou University  
**Email:** slfu@isu.edu.tw
  10. **Chapter Name: Council on RFID (CRFID-741)**  
**Chapter Chair:** Wen-Jiao Liao  
**Title and Affiliation:** Distinguished Professor, Department of Electrical Engineering, National Taiwan University of Science and Technology  
**Email:** cysim@fcu.edu.tw
  11. **Chapter Name: Control Systems Society Taipei Chapter (CS23)**  
**Chapter Chair:** Hsien-I Lin  
**Title and Affiliation:** Professor, Graduate Institute of Automation Technology, National Taipei University of Technology  
**Email:** sofin@ntut.edu.tw
  12. **Chapter Name: Education Society Taipei Chapter (E25)**  
**Chapter Chair:** Juing-Huei Su  
**Title and Affiliation:** Professor, Department of Electronic Engineering, Lunghwa University of Science and Technology  
**Email:** suhu@gm.lhu.edu.tw

13. **Chapter Name: Electron Devices Society Taipei Chapter (ED15)**  
**Chapter Chair:** Steve S. Chung  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Chiao Tung University  
**Email:** schung@cc.nycu.edu.tw
14. **Chapter Name: Engineering in Medicine and Biology Society Taipei Chapter (EMB18)**  
**Chapter Chair:** Jyh-Horng Chen  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Taiwan University  
**Email:** jhchen@ntu.edu.tw
15. **Chapter Name: Electromagnetic Compatibility Society Taipei Chapter (EMC27)**  
**Chapter Chair:** Cheng-Nan Chiu  
**Title and Affiliation:** Professor, Department of Electrical Engineering, Yuan Ze University  
**Email:** cnchiu@saturn.yzu.edu.tw
16. **Chapter Name: Geoscience and Remote Sensing Society Taipei Chapter (GRS29)**  
**Chapter Chair:** Yang-Lang Chang  
**Title and Affiliation:** Distinguished Professor of Electrical Engineering, and Dean of College of Electrical Engineering and Computer Science, National Taipei University of Technology  
**Email:** ylchang@ntut.edu.tw
17. **Chapter Name: Industry Applications Society Taipei Chapter (IA34)**  
**Chapter Chair:** Yu-Chen Liu  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Taiwan University of Science and Technology(Taiwan Tech)  
**Email:** ycliu@mail.ntut.edu.tw
18. **Chapter Name: Industrial Electronics Society Taipei Chapter (IE13)**  
**Chapter Chair:** Yi-Feng Luo  
**Title and Affiliation:** Assistant Professor, Graduate Institute of A.I. Cross-disciplinary Tech, National Tawan University of Science and Technology  
**Email:** yf.luo@mail.ntust.edu.tw
19. **Chapter Name: Instrumentation and Measurement Society Taipei Chapter (IM09)**  
**Chapter Chair:** Yao-Joe Joseph Yang  
**Title and Affiliation:** Distinguished Professor, Department of Mechanical Engineering, National Taiwan University  
**Email:** yjy@ntu.edu.tw
20. **Chapter Name: Information Theory Society Taipei Chapter (IT12)**  
**Chapter Chair:** I-Hsiang Wang  
**Title and Affiliation:** Professor, Graduate Institute of Communication Engineering and Department of Electrical Engineering, National Taiwan University  
**Email:** ihwang@ntu.edu.tw
21. **Chapter Name: Magnetics Society Taipei Chapter (MAG33)**  
**Chapter Chair:** Chi-Feng Pai  
**Title and Affiliation:** Associate Professor, Department of Materials Science and Engineering, National Taiwan University  
**Email:** cfpai@ntu.edu.tw

22. **Chapter Name: Microwave Theory and Techniques Society Taipei Chapter (MTT17)**  
**Chapter Chair:** Hong-Yeh Chang  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Central University  
**Email:** hychang@ee.ncu.edu.tw
23. **Chapter Name: Oceanic Engineering Society Taipei Chapter (OE22)**  
**Chapter Chair:** Forng-Chen Chiu  
**Title and Affiliation:** Professor, Department of Engineering Science and Ocean Engineering, National Taiwan University; Director, National Center for Ocean Research (Preparatory Office), NARL  
**Email:** fcchiu@ntu.edu.tw
24. **Chapter Name: Power and Energy Society Taipei Chapter (PE31)**  
**Chapter Chair:** Yu-Chi Wu  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National United University  
**Email:** ycwu@nuu.edu.tw
25. **Chapter Name: Power Electronics Society Taipei Chapter (PEL35)**  
**Chapter Chair:** Katherine A. Kim  
**Title and Affiliation:** Associate Professor, Department of Electrical Engineering, National Taiwan University  
**Email:** kakim@ntu.edu.tw
26. **Chapter Name: Photonics Society Taipei Chapter (PHO36)**  
**Chapter Chair:** Yuh-Renn Wu  
**Title and Affiliation:** Professor, Graduate Institute of Photonics and Optoelectronics, National Taiwan University
27. **Chapter Name: Product Safety Engineering Society Taipei Chapter (PSE43)**  
**Chapter Chair:** Claire Tsai  
**Title and Affiliation:** Safety Test Lead, Lenovo Technology B.V. Taiwan Branch  
**Email:** ctsai4@lenovo.com
28. **Chapter Name: Robotics and Automation Society Taipei Chapter (RA24)**  
**Chapter Chair:** Hsueh-Cheng Wang  
**Title and Affiliation:** Associate Professor, Department of Electrical and Computer Engineering, National Yang Ming Chiao Tung University  
**Email:** hchengwang@nycu.edu.tw
29. **Chapter Name: Reliability Society Taipei Chapter (RL07)**  
**Chapter Chair:** Ming Hour Yang  
**Title and Affiliation:** Professor, Department of Information and Computer Engineering, Chung Yuan Christian University  
**Email:** mhyang@cycu.edu.tw
30. **Chapter Name: Sensors Council Taipei Chapter (SEN39)**  
**Chapter Chair:** Jerry L.-C. Tai  
**Title and Affiliation:** Assistant Professor, Department of Electrical and Computer Engineering, National Yang Ming Chiao Tung University  
**Email:** j.tai@nycu.edu.tw

31. **Chapter Name: Systems, Man, and Cybernetics Taipei Chapter (SMC28)**  
**Chapter Chair:** Li-Wei Ko  
**Title and Affiliation:** Professor, Institute of Electrical and Control Engineering, National Yang Ming Chiao Tung University  
**Email:** lwko@nycu.edu.tw
32. **Chapter Name: Systems, Man, and Cybernetics Taichung Chapter (SMC28-TC)**  
**Chapter Chair:** Ching-Chih Tsai  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Chung Hsing University  
**Email:** cctsai@nchu.edu.tw
33. **Chapter Name: Signal Processing Society Taipei Chapter (SP01)**  
**Chapter Chair:** Jing-Ming Guo  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Taiwan University of Science and Technology  
**Email:** jmguo@seed.net.tw
34. **Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**  
**Chapter Chair:** Yu-Te Liao  
**Title and Affiliation:** Professor, Department of Electronics and Electrical Engineering, and Director, Institute of Electrical and Computer Engineering, National Yang Ming Chiao Tung University  
**Email:** yudoliao@nycu.edu.tw
35. **Chapter Name: Vehicular Technology Society Taipei Chapter (VT06)**  
**Chapter Chair:** Sau-Hsuan Wu  
**Title and Affiliation:** Professor, Department of Electronic and Electrical Engineering, National Yang Ming Chiao Tung University  
**Email:** sauhsuan@nycu.edu.tw
36. **Chapter Name: Microwave Theory and Technique Society Taipei Chapter(MTT17)**  
**Chapter Chair:** Hong-Yeh Chang  
**Title and Affiliation:** Professor, Department of Electrical Engineering, National Central University  
**Email:** hychang@ee.ncu.edu.tw

- Number of Active Chapters (Chapters who have reported required number of meetings during the year): 35
- Summary of Chapter activities (Chapter wise with attachment table/information)

### **1. Chapter Name: Antennas and Propagation Society Taipei Chapter (AP03)**

In 2023, IEEE AP-S Taipei Chapter (AP03) held and sponsored four technical activities as follows:

- I. 2023 Electromagnetics Workshop-A Bridge to the future  
 Venue: National Central University, Taoyuan, Taiwan. Date: 16-17 January 2023.

Annual technical forum for professors, industries and graduate students, in conjunction with MOST term reports.

The Electromagnetics Workshop-A Bridge to the future is the largest exchange platform for electromagnetic technology elites in Taiwan. The meeting mainly invites major domestic research teams, scholars and industry experts to give special reports and present research results. The content includes advanced technology course lectures with the current status of industrial development, as well as future research and development in the field of microwave and millimeter waves and the skill needs of the industry. It is expected to use engineering technology as the cornerstone to establish a horizontal and vertical development bridge between industry,



government, academia.

Website: <http://www.mostcep.tw/telecom2023/index.php?action=programe&cid=2&id=3>

Attendees	Technical Reports	IEEE Members	IEEE APS-Members
200	20	150	50

## II. 2023 EM Education Initiative: Summer Program

Venue: National Chung Hsing University, Taichung, Taiwan, Date: 7-11, August 2023.

Annual based summer school for new graduate students; it is also open to industrial peoples. The attendees are blooming to 400 persons. In this year, the summer program provide the workshop on the following topic.

- (1). Applied for 5G antenna design and auxiliary research and development of electromagnetic technologies,
- (2). Fundamental transmission line theory and its application
- (3) Basic microwave measurement
- (4) Microwave passive circuit Design
- (5) Introduction to radio frequency transceiver design
- (6) Application and Development of electromagnetic technology in advanced system package
- (7) Introduction to radar system
- (8) Introduction to radio frequency, microwave, millimeter wave integrated circuit and its application
- (9) Electromagnetic interference analysis based on power integrity and signal integrity, etc.

<http://www.etop.org.tw/index.php?d=epp&c=epp12911&m=show&id=1523>

Attendees	Mini-Workshop	IEEE Members	IEEE APS-Members
100	9	30	30

## III. The 7th seminar explores communication and sustainability in anticipation of arrival of next-generation smart living, Venue: Hua Nan Bank International Convention Center, Taiwan, Date: 26 Sept. 2023

The seventh annual seminar of the Auden Techno Corp. recently concluded (9/26) at the Hua Nan Bank International Convention Center. In response to the impacts of climate change and the increasingly important topics of energy conservation and carbon reduction in different industries, this year's theme was "Wireless Convergence for Infinite Sustainability." Exploring the idea of "Infinite Sustainability," the goal was to integrate wireless communication through smarter software, more efficient designs, and more open architectures, building networks that are ubiquitous across various domains. This year's seminar notably added the topics of ESG, the net-zero carbon emissions goal, and sustainable development as a whole. This event was the first carbon-neutral seminar in the communications industry. Besides encouraging participants and staff to bring their own water bottles and environmentally friendly utensils to reduce carbon emissions, under the guidance of the new group venture, - Auden Intelligence Carbon Solution Co. Ltd., international carbon rights were purchased to offset the carbon emissions from this event, actively responding to international climate action and putting it into practice.

<https://www.digitimes.com/news/a20231101PR201.html?chid=9>

Attendees	Technical Reports	IEEE Members	IEEE APS-Members
240	20	100	50

## IV. Metasurface Antennas: The Third Generation, Venue: National Taiwan University, Taipei, Taiwan. Date: 6 Dec. 2023.

Speaker : Prof. Stefano Maci / University of Siena

*Metasurfaces constitute a class of thin metamaterials, which can be used from microwave to optical frequencies to create new electromagnetic engineering devices. They are obtained by a dense periodic texture of small elements printed on or etched in a dielectric substrate. Changing the dimension of the elements, being the sub-wavelength 2D-periodicity equal, gives the visual effect of a pixelated image and the electromagnetic effect of a modulation of the equivalent local impedance boundary conditions (IBC). Molding IBC allows for a local modification of the dispersion equation and, at constant operating frequency, of the local wavevector; thus, enabling a transformation of surface or guided waves into different wavefield configurations with required properties. This talk will be focused in SWs manipulation control, with example in design of high-gain, low cross-pol antennas, multibeam antennas, scanning beam flat lenses. The third generation of adaptive MTSs,*

composed of dynamically reconfigurable boundary conditions, would allow the exploration new perspective in new generation wireless communication systems.

Website: <http://temiac.ee.ntu.edu.tw/news/news.php?Sn=509>

Attendees	Technical Reports	IEEE Members	IEEE APS-Members
82	1	40	20

## **2. Chapter Name: Broadcast Technology Society Taipei Chapter (BT02)**

Two meeting reports have been submitted to IEEE. They are listed below.

i. Workshop on Artificial Intelligence-Based Brain Computer Interface Rehabilitation System

Date: 13 January 2023

Location: 1, Sec. 3, Zhongxiao E. Rd., Taipei 10608 Taiwan (R.O.C.)

Attendance: Member: 45, Guests 32

The series talks: The workshop series provided an in-depth exploration of the Artificial Intelligence-Based Brain Computer Interface Rehabilitation System. Discussions centered on the system's current capabilities, demonstrating an impressive ~80% detection accuracy for at least four classes of imagery movements. Emphasis was placed on the potential extensions of the system to detect additional imagery movements, aiming to enhance the quality of life for individuals facing neuromuscular damages, limb paralysis, and motor neuron diseases. The series facilitated collaborative discussions, sharing of research insights, and the exploration of avenues for advancing BCI-based rehabilitation systems in the coming year.

ii. Workshop on Machine Learning for Cybersecurity and Privacy

Date: 3 July 2023

Location: 1, Sec. 3, Zhongxiao E. Rd., Taipei 10608 Taiwan (R.O.C.)

Attendance: Member: 35, Guests 40

The series talks: This workshop, hosted by the National Taipei University of Technology, delves into three pivotal research directions in the realm of cybersecurity and privacy. Presented by distinguished speaker Prof. Benjamin C. M. Fung from McGill University, Canada, the workshop unfolds with a focus on privacy-preserving data publishing. The objective is to facilitate the sharing of extensive datasets for machine learning while safeguarding individual privacy. The discussions span various scenarios in privacy-preserving data publishing. The second research direction explores authorship analysis, aiming to discern authors or infer their characteristics based on distinctive writing styles. Lastly, the workshop addresses the critical issue of malware analysis, emphasizing the significance of assembly code analysis in countering the escalating threats posed by malicious software. The session introduces an award-winning assembly code clone search engine, showcasing its effectiveness in streamlining the labor-intensive and time-consuming process faced by reverse engineers.

## **3. Chapter Name: Computer Society Taipei Chapter (C16)**

Invited talk- (November 23, 2023)

Speaker: Prof. Dr. Mario Fritz, faculty at the CISPA Helmholtz Center for Information Security

Title: Trustworthy AI and A Cybersecurity Perspective on Large Language Models

Location: Research Center for Information Technology Innovation, Academia Sinica, 128 Academia Road, Section 2, Nankang, Taipei 115, Taiwan

Attendance: Members, Guests

Website: [https://www.citi.sinica.edu.tw/assets/htmls/IZ230015\\_zh.html](https://www.citi.sinica.edu.tw/assets/htmls/IZ230015_zh.html)

Abstract: As AI technology is getting increasingly mature, we see a broad deployment of AI in many application domains. However, this increases the demands on properties related to trustworthiness like robustness, privacy, transparency, accountability as well as explainability. In this talk, I will demonstrate what this means for future AI methodology and how we can reach those goals. Furthermore, for some of these properties like privacy and robustness, we can even provide guarantees so that we can ensure that these properties also hold in the future.

Besides trustworthiness of AI, misinformation and deepfakes are becoming a key concerns in terms of negative effects that AI can have on society. I'll discuss the larger ecosystem around misinformation and different approaches to mitigate these pressing issues in the future.

Finally, Large Language Models (LLMs) like GPT4 have demonstrated how AI deployment is reaching millions of users, which in turn puts a magnifying glass on some of the issues mentioned before. I'll demonstrate cybersecurity concerns and threats that emerge from the recent trend of application-integrated LLMs and AI assistants as well as sketch how future development will initiate completely new research challenges in this domain.

#### **4. Chapter Name: Circuits and Systems Society Taipei Chapter (CAS04)**

In year 2023, we have accomplished the following activities:

Date	Speaker/title/venue
2023.03.31	<b>CASS DLP Talk : Dr. Yen-Kuang Chen</b> Title: AI AND VIDEO COMPRESSION IN THE ERA OF INTERNET OF VIDEO THINGS Host: Dr. Bor-Sung Liang Venue: National Yang Ming Chiao Tung University 166 attendees (56 in-person, 110 attendees by Webex)
2023.08.02	<b>IEEE CASS Taipei Chapter Meeting</b> (with CASS Tainan Chapter SSCS Taipei Chapter, SSCS Tainan Chapter) Venue: E-Da Royal Hotel, Kaohsiung 35 attendees
2023.09.27	<b>Speech: Prof. Shimeng Yu</b> Title: Recent Progresses of Compute-in-Memory Prototype Chips: RRAM, 3D

	<p>integration and Ferroelectric Technologies</p> <p>Host: Prof. An-Yeu (Andy) Wu</p> <p>Venue: National Taiwan University</p> <p>85 attendees ( 60 in-person, 25 on-line)</p>
2023.10.12	<p><b>CAS Emerging and Selected Topics for Industry Forum (CASIF)</b></p> <p>Title: IC Design Challenge in AI Era</p> <p>Venue: Taipei International Convention Center (TICC)</p> <p>Agenda:</p> <p><u>Opening:</u></p> <ul style="list-style-type: none"> <li>● Dr. Bor-Sung Liang, Senior Director, MediaTek / Chair, CASS Taipei Chapter</li> </ul> <p><u>Remarks:</u></p> <ul style="list-style-type: none"> <li>● Dr. Lawrence Loh, President, MediaTek USA / Corporate Senior Vice President, MediaTek</li> <li>● Dr. Chia-Lin Yang, Deputy Executive Secretary, OSTP, National Science and Technology Council</li> <li>● Dr. Chyou-Huey Chiou, Director General, Dept. Industrial Technology, Ministry of Economic Affairs</li> </ul> <p><u>Introduction of IEEE CAS Society</u></p> <ul style="list-style-type: none"> <li>● Dr. Kea-Tiong (Samuel) Tang, Professor, EE, NTHU /Vice President, Regional Activities and Membership, IEEE CASS</li> </ul> <p><u>Keynote</u></p> <ul style="list-style-type: none"> <li>● Title: Challenges in Advanced IC Design Industry: From Technology to Talents</li> <li>● Dr. Meng-Fan (Marvin) Chang, IEEE Fellow, Director, Corporate Research, TSMC</li> <li>● Host: Dr. Bor-Sung Liang, Senior Director, MediaTek</li> </ul> <p><u>Technical Talk</u></p> <ul style="list-style-type: none"> <li>● Title: Edge AI Application Evolution – Opportunity and Challenge</li> <li>● Dr. Allen Lu, Assistant General Manager, Computing and Artificial Intelligence II FU, MediaTek</li> </ul>

	<ul style="list-style-type: none"> <li>● Host: Dr. An-Yeu (Andy) Wu, IEEE Fellow, EE, National Taiwan University</li> </ul> <p><u>Panel Discussion</u></p> <p>Title : Taiwan's AI Computing Journey: Challenges and Opportunities</p> <p>Moderator:</p> <ul style="list-style-type: none"> <li>● Dr. Shih-Chieh Chang, General Director, Electronic and Optoelectronic System Research Lab, ITRI</li> </ul> <p>Panelists</p> <ul style="list-style-type: none"> <li>● Dr. Chen-Yi Lee, Senior VP, National Yang Ming Chiao Tung Univ</li> <li>● Chairman Frankwell Lin, Chairman, Andes Technology</li> <li>● Dr. Meng-Fan (Marvin) Chang, Director, TSMC</li> <li>● Dr. Allen Lu, Senior Director, MediaTek</li> <li>● Dr. Tuo-Hung (Alex) Hou, Director General, Taiwan Semiconductor Research Institute (TSRI)</li> </ul> <p>Organizer: IEEE CASS Taipei</p> <p>Co-organizer:</p> <ul style="list-style-type: none"> <li>● IEEE Taipei Section</li> <li>● RISC-V Taipei Alliance</li> <li>● MediaTek Advanced Research Center</li> <li>● TSIA ((Taiwan Semiconductor Industry Association)</li> <li>● IEEE CASS Tainan Chapter</li> <li>● TIARA (Taiwan IC Industry &amp; Academic Research Alliance)</li> <li>● TWIoTA (Taiwan IOT Technology and Industry Association)</li> <li>● AITA (AI on Chip Taiwan Alliance).</li> </ul> <p>423 participants.(153 participants attending in person and 270 participants joining online)</p>
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**5. Chapter Name: Consumer Technology Society Taipei Chapter (CE08)**

In 2023, CT-08 has continuously grown in both the number of members and the quality of activities.

- i. 2023 TAIWAN CONSUMER ELECTRONICS INTERNATIONAL CONFERENCE ICCE-TW 2023:

The ICCE-TW's milestone tenth edition marked a notable ascent in its trajectory, with a record-breaking assembly of over 360 delegates, encompassing both domestic and international scholars and dignitaries. This figure represents an unprecedented peak in both participation and paper submissions in the conference's chronicle. The meticulously curated program spanned three days, featuring an array of academic activities that included 4 Keynote Speech, 53 oral presentations, 3 poster sessions, and a specialized roundtable for female scientists.

Statistical Analysis of Pertinent Data

The conference registered a total attendance of 380 individuals, comprising 242 domestic and 138 international participants, from 16 countries.



Report Event Link: <https://events.vtools.ieee.org/m/390129>

ii. Event: WIE SPECIAL SESSION: RESEARCH, LEADERSHIP, AND LIFE CHALLENGES IN STEM

The WiE Special Session focusing on "Research, Leadership, and Life Challenges in STEM" was a significant milestone in promoting gender diversity and empowerment in the STEM community. The session's diverse lineup of speakers, the insightful presentation by Prof. Hsin-Hui Hu, the interactive coffee table discussion, and the commitment expressed by IEEE CTSoc President Prof. Wen-Chung Kao collectively contributed to creating a conducive environment for open dialogues and collaborative efforts. The event emphasized the importance of recognizing and addressing challenges faced by women researchers while advocating for their increased representation and involvement in STEM-related activities.



Report Event Link: <https://events.vtools.ieee.org/m/390206>

iii. Professional Event: TAIWAN CONSUMER ELECTRONICS SCHOLARS' DISCUSSION: LOW EARTH ORBIT SATELLITES, AI RESEARCH, AND IEEE CTSOC TALENT DEVELOPMENT PLAN

This report outlines the Taiwan Consumer Electronics Scholars' Discussion held on September 14, 2023, at the Sheraton Taipei Hotel. The conference focused on topics such as Low Earth Orbit Satellites, the research and development of Artificial Intelligence (AI), and industry demands. Additionally, discussions centered around the implementation of the IEEE CTSoc Talent Development Plan.

Conclusion:

The conference successfully facilitated communication between academia and industry, deepening the understanding of Low Earth Orbit Satellites and AI research.

Valuable insights were gathered during the discussion on the IEEE CTSoc Talent Development Plan, contributing to the advancement of the respective fields.



Report Event Link: <https://events.vtools.ieee.org/m/392458>

iv. Technical Event: THE CHALLENGE OF LEADERSHIP OF WIE

The luncheon on 6/8 featured Principal Jean-Lien C. Wu (陳金蓮) as the guest speaker, who shared her experiences and insights on organizational leadership for female engineers and researchers. The discussion encompassed the roles and challenges of women in the field of technology and strategies for developing leadership skills to drive individual and organizational success.



Roles and Challenges of Female Engineers and Researchers: Principal Wu commenced her presentation by delving into the various challenges faced by women in the technology field, such as gender equality and unequal career advancement opportunities. Drawing from her own extensive academic achievements and experience, Principal Wu highlighted the advantages women possess in technology and innovation, encouraging active participation in leadership roles.

Developing Leadership Skills: Principal Wu shared her experiences in developing leadership skills throughout her career. She mentioned essential techniques and strategies, including effective communication, decision-making abilities, fostering teamwork, and motivating team members. Principal Wu encouraged female engineers and researchers to embrace challenges while maintaining a positive attitude towards continuous learning and growth.

Report Event Link: <https://events.vtools.ieee.org/m/363862>

v. Best thesis award

At the end of 2023, CTSoc Taipei charter organizes the election for the excellent thesis award. With a large number of applications, CTSoc Taipei charter has established a scientific committee to evaluate and vote for awards to select the best quality thesis:

- Ph.D. thesis awarded for the student from National Taiwan Normal University
- M.S. thesis awarded for the student from National Taiwan University of Science and Technology

**6. Chapter Name: Council on Electronic Design Automation Taipei Chapter (CEDA44)**

**7. Chapter Name: Computational Intelligence Society Taipei Chapter (CIS11)**

i. The Invited Talk - Invited IEEE CIS Distinguished Lecturer Talk, Prof. Nikhil R Pal, IEEE Fellow

Date: September 11, 2023

Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan

Attendance: 58

Topic: In this “bigger the better” era, how relevant is dimensionality reduction!

Nikhil R Pal is a Professor in the Electronics and Communication Sciences Unit, and he was the founding Head of the Center for Artificial Intelligence and Machine Learning of the Indian Statistical Institute. His current research interest includes brain science, computational intelligence, machine learning and data mining. Professor Nikhil Pal is a recipient of the 2015 IEEE Computational Intelligence Society (CIS) Fuzzy Systems Pioneer Award and 2021 IEEE CIS Meritorious Service Award. He has served as the General Chair, Program Chair, and co-Program chair of several conferences. He has been a Distinguished Lecturer of the IEEE CIS (2010-2012, 2016-2018, 2022-2024) and was a member of the Administrative Committee of the IEEE CIS (2010-2012). He has served as the Vice-President for Publications of the IEEE CIS (2013-2016) and the President of the IEEE CIS (2018-2019). Professor Nikhil Pal is a Fellow of the West Bengal Academy of Science and Technology, Institution of Electronics and Tele Communication Engineers, National Academy of Sciences, India, Indian National Academy of Engineering, Indian National Science Academy, International Fuzzy Systems Association (IFSA), The World Academy of Sciences, and a Fellow of the IEEE, USA.





ii. The Invited Talk - Decomposed Fuzzy Systems, Chair Prof. Shun-Feng Su, IEEE Fellow

Date: September 11, 2023

Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan

Attendance: 58

Topic: Decomposed Fuzzy Systems

Dr. Su is a Chair Professor of the Department of Electrical Engineering, National Taiwan University of Science and Technology, Taiwan, R.O.C. He also is the Vice President for research in that university since 2023. He is a Fellow for various societies, including IEEE, IFSA, CACS, TFSA, and RST. He has published more than 300 refereed journal and conference papers in the areas of robotics, intelligent control, fuzzy systems, neural networks, and non-derivative optimization. His current research interests include intelligent control, computational intelligence, machine learning, intelligent manufacturing, data science, and robotics. Dr. Su is very active in various international/domestic professional societies. He now is the Vice President for publication of the IEEE SMC society. He also serves as a board member of various academic societies. Dr. Su also acted as General Chair, Program Chair, or various positions for many international and domestic conferences. Dr. Su currently serves as associate editors of IEEE Transactions on Cybernetics, of IEEE Transactions on Fuzzy Systems, and of Information Science, a senior editor and associate editor of IEEE Access, the executive editor of the Journal of the Chinese Institute of Engineers, and an area editor and associate editor of International Journal of Fuzzy Systems.

i. Technically Sponsored 2023 Taiwan-Japan Bilateral Smart Medicine Workshop

Workshop topic: State-of-the-Art AI Technologies for Biomedical Imaging Detection

Date: Oct. 13, 2023.

Venue: National Yang Ming Chiao Tung University, Taipei, Taiwan

Attendance: 56

The IEEE CIS Taipei Chapter organized the 2023 Taiwan-Japan Bilateral Smart Medicine Workshop on October 13, 2023, at the National Yang Ming Chiao Tung University, Yangming Campus. The SMC Chapter Chair, Professor Li-Wei Ko, served as the host for this activity. The workshop's theme focused on "State-of-the-Art AI Technologies for Biomedical Imaging Detection," facilitating discussions and exchanges between Japan and Taiwan in the application of AI in biomedical imaging detection.

The workshop featured five keynote speeches, summarized as follows:

1. Professor Kohsuke Kudo from Hokkaido University Graduate School of Medicine, Japan, delivered a lecture titled "Development and Functionality of the Brain Perfusion Imaging Analysis Program PMAneo."
2. Vice President and Chair Professor John S. Kuo from China Medical University, Taiwan, delivered a lecture titled "Advanced Brain Tumor Imaging with Theranostic Alkylphosphocholine Analogs."
3. Professor Yu-Te Wu from National Yang Ming Chiao Tung University, Taiwan, offered insights into "Convolutional Neural Deep Learning Network for Automatically Labeling Brain Tumors."
4. Professor Ryo Itabashi from Iwate Medical University, Japan, discussed the "Implementation of Quantitative Evaluation of DWI Ischemic Core Volume in Patients with Large Vessel Occlusion Using PMAneo in Clinical Practice."
5. Professor Kai-Cheng Hsu from China Medical University Hospital, Taiwan, shared his expertise on "Pioneering the Future: AI-driven Techniques in Stroke Detection."

This event gathered 56 attendees, engaging in productive discussions and exchanges throughout the workshop.



- ii. CIS Taipei Chapter organized a special session in iFUZZY2023.

Conference title: 2023 International Conference on Fuzzy Theory and Its Applications (iFUZZY 2023)

Date: Oct. 26-29, 2023.

Venue: National Penghu University of Science and Technology, Penghu, Taiwan

Attendance: IEEE member: 100, Guests: 200

The CIS Chapter Chair, Prof. I-Fang Chung, served as a Chair of the special Session SS-04: Computational intelligence in biomedical engineering. IFUZZY 2023 is soliciting novel research results on fuzzy theory and its applications and related topics. This event provides scientists, engineers, and practitioners a great opportunity to present the latest design concepts, research results, developments, and applications and facilitates interactions between scholars and practitioners.

iii. CIS Taipei Chapter organized a special session in ICAST2023.

Conference title: The 12th International Conference on Awareness Science and Technology (ICAST 2023)

Date: Nov. 9-11, 2023.

Venue: Chaoyang University of Technology (CYUT), Taichung, Taiwan

Attendance: IEEE member: 100, Guests: 200

The CIS Chapter Chair, Prof. I-Fang Chung, served as a Chair of the special Session SS2: Deep Learning Technology for Biomedical Signals and Images Applications. The conference provides a forum for researchers, engineers, and scientists to discuss awareness computing and exchange ideas, opinions, and the latest results in this emerging new field.

## **8. Chapter Name: Communications Society Taipei Chapter (COM19)**

### **i. 2023-Spring IEEE Taiwan Workshop on Information Theory and Communications**

Date: January 16 – January 17, 2023

Venue: National Central University, Taoyuan, Taiwan

Summary: The 2023-Winter IEEE Workshop on Information Theory and Communications was held in Taoyuan, Taiwan from Jan. 16 to Jan. 17, 2023. The website of the workshop is at <http://www.mostcep.tw/telecom2023/index.php?action=programe&cid=1&id=1>. The primary goal of the workshop is to promote information exchange between the researchers in Taiwan in the fields of information theory and communications. The workshop is co-sponsored by IEEE Communications Society Taipei Chapter, IEEE Communications Society Tainan Chapter, IEEE Information Theory Taipei Chapter, IEEE Information Theory Tainan Chapter, and the Ministry of Science and Technology in Taiwan. The workshop program includes 7 invited talks, and a joint member meeting for IEEE Communications Society Taipei Chapter, IEEE Communications Society Tainan Chapter, IEEE Information Theory Society Taipei Chapter, and IEEE Information Theory Tainan Chapter. Among the 7 invited speakers, 6 speakers are professors from three universities in Taiwan and one speaker is from USA. Over 150 people attended the workshop.

### **ii. 2023 Summer School on Information/Communication Theory and Technologies**

Date: August 14 – August 15, 2023

Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan / Online

Summary: The 2021 Summer School on Information/Communication Theory and Technologies was held at National Yang Ming Chiao Tung University, Hsinchu, Taiwan from Aug. 14, 2023 to Aug. 15, 2023 and broadcasted online. The summer school contains 9 two-hour short courses. The topics of the short courses are “Wireless MIMO communication systems”, “Principle of Digital Communications”, “A Brief Introduction to Information Theory and Coding”, “Satellite Communications and 3GPP Standards”, “Wireless Localization: From Fundamentals to Beyond 5G”, “Introduction to Integrated Sensing and Communications (ISAC)”. More than 100 students registered and attended the summer school. In addition to National Yang Ming Chiao Tung University, the graduate students came from more than 10 universities in Taiwan including National Taiwan University, National Tsing Hwa University, and National Cheng Kung University, to name a few. The 6 speakers are well-known professors in the field of communications engineering and information theory in Taiwan, and they are affiliated with four different universities including National Yang Ming Chiao Tung University, National Tsing Hwa University, National Taiwan University, and National Taipei University. The summer school on information/communication theory and technologies has been held in Taiwan for more than 20 years. It is a great event for students and scholars in related fields to get together and learn new knowledge.

iii. 2023-Fall IEEE Taiwan Workshop on Information Theory and Communications

Date: August 22 2023

Venue: National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan

Summary: The 2023-Spring IEEE Workshop on Information Theory and Communications was held in Kaohsiung, Taiwan on August 22 2023. The website of the workshop is at <https://ccee.nkust.edu.tw/p/412-1054-9326.php?Lang=zh-tw>. The primary goal of the workshop is to promote information exchange between the researchers in Taiwan in the fields of information theory and communications. The workshop is co-sponsored by IEEE Communications Society Taipei Chapter, IEEE Communications Society Tainan Chapter, IEEE Information Theory Taipei Chapter, IEEE Information Theory Tainan Chapter, and the Ministry of Science and Technology in Taiwan. The workshop program includes 7 invited talks, and a joint member meeting for IEEE Communications Society Taipei Chapter, IEEE Communications Society Tainan Chapter, IEEE Information Theory Society Taipei Chapter, and IEEE Information Theory Tainan Chapter. Among the 7 invited speakers, 6 speakers are professors from three universities in Taiwan and one speaker is from China. Over 100 people attended the workshop.

iv. IEEE Distinguished Lecture

Time: December. 19, 2023; 10:00 a.m. (GMT+8)

Speaker: Dr. A.C. Pang, FIEEE, National Taiwan, Taiwan.

Place: National Chung Hsing University, Taichung

Country: Taiwan

Attendance: 80

Event Description:

The talk introduces issues faced by FL implementation in edge devices.

**9. Chapter Name: Components, Packaging, and Manufacturing Technology Society Taipei**

**Chapter (CPMT21)**

i. International Microsystems, Packaging, Assembly and Circuits Technology Conference (IMPACT) 2023

Date: 10/25/2023~10/27/2023

Venue: Taipei Nangang Exhibition Hall

Attendance: 569 Guests

Activities: 4 plenary speeches, 27 invited speeches, 28 oral sessions, 2 poster sessions and 1 panel  
IMPACT 2023 Conference, organized by IEEE EPS-Taipei, iMAPS-Taiwan, ITRI and TPCA, is the largest gathering of packaging and PCB professionals in Taiwan. IMPACT 2023 was held in conjunction with TPCA Show 2023 from Oct.25 to 27 at Taipei Nangang Exhibition Center. The website of the IMPACT 2023 is at <https://www.impact.org.tw>. The symposium focuses on the theme “IMPACT on the future of HPC, AI, and Metaverse”, exploring the latest electronic technologies and fostering collaboration among enterprises and organizations. The rapid development of HPC, AI, and Metaverse technologies revolutionize existing technologies, connecting people in new ways and redefining our lives. To provide a valuable platform for these innovations, IMPACT 2023 hosts plenary speeches, special sessions, industrial sessions, invited talks, outstanding papers, and poster presentations. This conference also collaborates with international organizations such as ICEP and JIEP from Japan, iNEMI and IEEE EPS from the USA, and global consulting companies like Yole Development and Techsearch from the USA.

**10. Chapter Name: Council on RFID (CRFID-741)**

**11. Chapter Name: Control Systems Society Taipei Chapter (CS23)**

**12. Chapter Name: Education Society Taipei Chapter (E25)**

i. 19TH TAIWAN MICROMOUSE AND INTELLIGENT ROBOT CONTEST (8/20/2023)

Attendance: 318

The international contest is supported by the Taiwan Ministry of Education, whose objective is to encourage those vocational and technical university students in Taiwan to implement a complete robotic system and to improve their implementation skills through contests. Those invited famous international contestants finally could attend the contest after the impact of COVID19. The mobile robot contest includes Micromouse, Robotrace and Line-maze competitions, and the fastest running robot in 3 trials wins the contest.



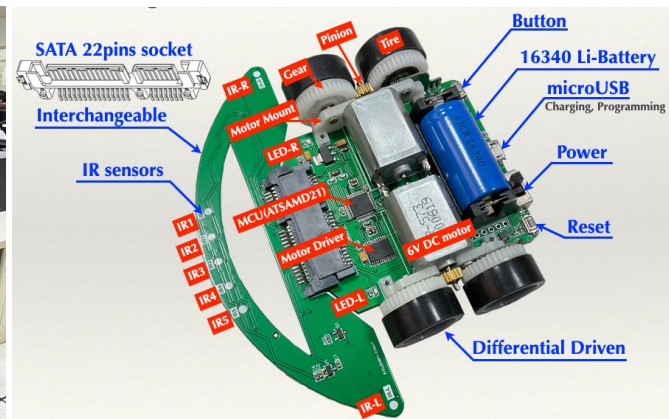


ii. WORKSHOP FOR ArduBot Pro- a kit for Micromouse, Robotrace, and LineMaze contests  
(7/11/2023)

Attendance: 32

The objective of this workshop is to introduce the mobile robot kit ArduBot Pro to both the university and high school vocational students in Taiwan.

ArduBot Pro, which is an intelligent mobile learning platform and fully compatible with Arduino MKRZERO, is devised in Lunghwa University of Science and Technology for students in both universities and high schools to learn related knowledge and implementation skills in Micromouse, Robotrace, and LineMaze contests. The head of ArduBot Pro is changeable, which makes it versatile for different contests. By using ArduBot Pro, the students can not only learn the basic I/O controls, but also sensor calibration, weighted average line position estimation, digital position and velocity servo control, path and speed profiles planning, and maze solving algorithms. ArduBot Pro is a cost-effective learning platform (<NT\$2500), and can support the text based Arduino IDE.



Three technical activities were organized by the chapter, in which one was joint event with the VLSI-TSA (ITRI). They are listed below.

i. August 30, 2023

**SiC Power Chip Fabrication in Volume Si Fabs** (*Dr. Victor Veliadis, PowerAmerica/NC State University, United States*)

Attendance: Members 30, Guests 90

Activities: DL talk

#### **14. Chapter Name: Engineering in Medicine and Biology Society Taipei Chapter (EMB18)**

#### **15. Chapter Name: Electromagnetic Compatibility Society Taipei Chapter (EMC27)**

In 2023, IEEE EMC-S Taipei Chapter (EMC27) held and sponsored two technical activities as follows:

i. Smart Life for Next Generation – Wireless Convergence for Infinite Sustainability

Date: Sept. 26, 2023

IEEE EMC Taipei Chapter together with AUDEN Techno Corp. organized the seventh symposium on the topic of “Smart Life for Next Generation – Wireless Convergence for Infinite Sustainability” on Sept. 26, 2023. It hosted at HNBK international convention center in Taipei. In this morning, the symposium began with VIP welcome remarks and the General Session of keynote speeches. The Technical Sessions with four major tracks were hosted in this afternoon. The conference focused on the B5G / 6G key technologies ORAN and sustainability challenging issues.

ii. Green Energy Product Testing Technology and Verification Seminar

Date: Oct. 27, 2023

The seminar was held both on site and in virtual. It focused on the electromagnetic compatibility technology for green power products such as electric vehicle and solar systems. The products were considered from IC level to system level. The presentations widely cover the design concepts, simulation techniques, measurement skills and validation procedures.

#### **16. Chapter Name: Geoscience and Remote Sensing Society Taipei Chapter (GRS29)**

##### **I. Technical Seminars:**

1.1 Date: 8 March 2023

Speaker: CTO, SU, LIAN-SONG

Affiliation: Galaxy Software Services, Taiwan

Title of Talk: Actual protection of enterprise information security from the perspective of network security incidents

Location: National Taipei University of Technology, Taipei, Taiwan

##### **II. Other Technical Activities:**

2.1 Date: 20 September 2023

Speaker: Chairman, Prof. WU, ZONG-SIN

Affiliation: Taiwan Space Agency  
Title of Talk: Taiwan's dream of space  
Location: National Taipei University of Technology, Taipei, Taiwan

### **III. Professional Development (career advising, mentoring, etc.):**

3.1 Date: 4 October 2023  
Speaker: Prof. LIAN-SONG WONG  
Affiliation: Manger, Qisda Corporation.  
Title of Talk: Opportunities and challenges in space technology startups  
Location: National Taipei University of Technology, Taipei, Taiwan

### **IV. 2023 IEEE GRSS Taipei Chapter Best Thesis Award.**

The IEEE GRSS Taipei Chapter Best Thesis Award has been established to recognize both college and graduate students who are excellent in the field of geoscience and remote sensing. The Best Thesis Award is granted on an annual basis to full-time students who excel in the academic pursuits during their studies. Each geoscience and remote sensing related academic department is allowed to nominate some candidates, who have to compete with other top students in the same faculty for the Award. In selecting the individuals, the factors considered are significance of both academic and educational contributions in terms of innovation and the extent of its overall impacts. The 2023 IEEE GRSS Taipei Chapter Best Thesis Award is presented to 3 students who come from different universities.. Note: 2023 IEEE GRSS Taipei Chapter Best Thesis Award Ceremony will be held on Feb. 29 2024.

### **V. Professional Activities**

Involvement with GRSS (participation in IGARSS and other GRSS-sponsored conferences, number of papers vs. number of membership, sessions organized at such conferences, hosting conferences, etc.)

**5.1 IGARSS 2023 Involvement:** There were more than 25 papers submitted and presented by IEEE GRSS Taipei Chapter members in IGARSS 2023 on line.

**5.2 IEEE GRSS ProjNET 2023** (Taipei Chapter with the ChapNet GRSS Malaysia)

ProjNET Name: Plant Disease Detection using Hyperspectral Images

Chapters Involved: **May, 2023**

	Chapter name	Investigator name
Chapter 1 (Lead)	GRSS Malaysia	Prof. Koo Voon Chet
Chapter 2	GRSS Taipei	Prof. Yang-Lang Chang



## **Project objectives:**

- I. To conduct long term field measurement at selected site using ground based synthetic aperture radar (GBSAR)
- II. To investigate the effects of precipitation on deformation in potential landslide areas

## **Details of project proposal:**

Landslides has become one of the major disasters in Malaysia that caused severe damage to properties and number of casualties especially in highly populated urban highland areas. This is largely due to development do not comply with national slope master plan. This study aims to monitor and detect surface deformation using ground-based synthetic aperture radar (GBSAR) as well as development of landslide prediction model at the landslide prone area. The identification of suitable location with ideal line-of-sight (LOS) can be determined using point cloud data and LiDAR software, while Differential Global Position System (DGPS) will determine location stability. The second objective devote to investigate the rainfall effects on the landslide area using different rainfall threshold methods. If possible two campaigns will be operated, one considering landslides unlikely to occur and the other based on rainfall threshold methods. The third objective is to propose an early warning system considering field parameters including deformation and topography information to support landslide early warning.

This system will be developed to provide early warning based on prediction model via field parameters including deformation, topography and precipitation. The outcome of this project would benefits various agencies including Mineral and Geoscience Department, Department of Public Works and local communities especially those in landslide prone area. Real-time monitoring of landslide motion allow reducing landslide risk by providing early warnings, avoiding possible subsequent landslides, and ensuring the safety of emergency rescue personnel. Furthermore, suitable mitigation measures can be planned to reduce future landslide risk in those prone area.

## **Activities and schedule:**

### **Phase 1: Data Collection on GBSAR at selected site (Year 1 Month 1-12)**

In this phase, an field measurement campaign at selected site will be conducted using a GBSAR operated in a fix station. During the period of field measurement campaign, the ground-truth data associated with the environment data (IOT weather station and flood monitoring system) as well as the setting of the artificial target will be collected. The GBSAR data and the ground-truth data will be archived for further processing in Phase 2.

### **Phase 2: Processing and analysis of GBSAR Data and environmental data (Year 1 Month 6-12; Year 2 Month 13-18)**

The second phase will concentrate on data analysis. After complete scanning, a substantial number of single-look complex (SLC) SLC images exist are generated via SAR image formation algorithm. One image will be served as the master image, while the rest will be served as slave images. To generate interferograms fringe, all these images must be co-registered. This procedure generates an interferograms that contains information about the deformation of the scanned target area. Since the phase value of each interferograms pixel is modulo  $2\pi$  and the range is between  $(-\pi$  and  $\pi)$ , the real phase value of the target region must be added to an integer multiple of  $2\pi$ . Phase unwrapping is a crucial step in the GBSAR system's data processing in order to obtain the true phase value. After unwrapping the phase of the interferograms, the target area's deformation value can be calculated using the true phase. The environmental data will be correlated with the GBSAR data to observe the relevancy of the data with surface deformation event.

### **Phase 3: Landslide Monitoring (Year 2 Month 19-24)**

The final phase will concentrate on the landslide monitoring based on landslide model. GPS, inclinometer, and wire extensometer are typical instruments that can be used to evaluate GBSAR data. The former provides information on surface deformation, whereas the latter provide

information on subsurface deformation. Hence, these methods will be employed to evaluate GBSAR data in this project. Once the accuracy of GBSAR data has been verified and confirmed, GBSAR data can be used as the major input parameter for the landslide model. This model is based on three main parameters that trigger landslides: deformation information (cumulative deformation, deformation rate), rainfall information (daily and antecedent rainfall), and topography. The proposed model determines landslide using three main information that included deformation rate, rate increment (both derived from GBSAR data) and tangential angle (derived from lidar data). Another main factor trigger landslide is rainfall, which can be determined by using antecedent rainfall.

GRSS Malaysia chapter will be in charge of the data collection and ground-truth measurement campaign. While GRSS Taipei will be in charge of the data processing. All Chapters will work together to achieve the primary objective of this project.

## **17. Chapter Name: Industry Applications Society Taipei Chapter (IA34)**

### 1. "PELS-IAS Technical Virtual Talk"

- Speaker: Dr. Daijiry Narzary
- Seminar Title: Multi Sensor Fault Detections in Industrial Drives
- Date: March 14, 2023, (Tue)
- Time: 10:00-11:00 am (Taiwan Time)
- Location: Virtual meeting

IEEE Member Attendance: 9

Guest Attendance: 16

### 2. "PELS-IAS Distinguished Lecturer Virtual Talk"

- Speaker: Dr. Keyue Ma Smedley, IEEE PELS Distinguished Lecturer and University of California at Irvine Professor
- Seminar Title: Breaking the Barrier of Bulky Magnetics in Power Conversion: Advances in Resonant Switched-Capacitor Converters
- Date: March 30, 2023, (Thu)
- Time: 9:00-10:15 am (Taiwan Time)
- Location: Virtual meeting

IEEE Member Attendance: 4

Guest Attendance: 12

### 3. "Joint Technical Physical & Virtual Talk"

- Speaker: Dr. Fang Z. Peng, who has been with Florida State University as the inaugural Distinguished Professor of Engineering
- Seminar Title: Instant Black Start and Grid Synchronization of Inverter-Based Resources
- Date: September 7, 2023, (Thu)
- Time: 10:00-11:30 am (Taiwan Time)
- Location: Physical (National Taipei Tech. University, Taipei) & Virtual meeting

IEEE Member Attendance: 32

Guest Attendance: 80

4. "Joint Taipei Section Technical Seminar"

【Talk 1】

• Speaker: Dr. Jeehoon Jung, Professor of Dept. of Electrical Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea.

• Seminar Title: Advanced Power Electronics Research of UNIST APIPEL: Hybrid Transformer, Bidirectional & Multiport Converters, Talkative DC Grid, Induction Heating, and Power HILS

【Talk 2】

• Speaker: Dr. Suyong Chae, Professor of Electrical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea.

• Seminar Title: Reliability Issues in Power Electronics Converters & Model Predictive Control

【Talk 3】

• Speaker: Dr. JongWon Shin, Associate Professor of Chung-Ang University, Seoul, South Korea

• Seminar Title: Recent development of low-voltage dc-dc converters in Hyundai Motor Company EVs

• Date: November 9, 2023, (Thu)

• Time: 3:30-5:00 pm (Taiwan Time)

• Location: NTU EE2 R105

IEEE Member Attendance: 15

Guest Attendance: 75

5. "2023 Symposium on Semiconductor Power Conversion (S2PC)"

• Purpose: to promote the exchange and collaboration between the power conversion communities of Japan, Korea, and Taiwan.

• Date: November 10-12, 2023

• Location: National Sun Yat-sen University (NSYSU), Kaohsiung, Taiwan.

IEEE Member Attendance: 68

Guest Attendance: 36

**18. Chapter Name: Industrial Electronics Society Taipei Chapter (IE13)**

i. International Forum on Green Energy Electronics

Date: 2023/04/25

Attendance: Virtual Seminar, 40+

The forum is organized and sponsored by Prof. Huang-Jen Chiu, National Taiwan University of Science and Technology. Prof. Chiu served as the chair of this workshop. We've invited Prof. Jasinski Marek, Warsaw University of Technology, Poland, Dr. Piasecki Szymon, Warsaw University of Technology, Poland, Mr. Bachman Serafin, Warsaw University of Technology,

Poland, and Prof. Herbert L. Ginn, University of South Carolina, USA. The presentation topics include AC-DC-DC Converters, DC//DC Converters, HPBCEV Project (High Power Battery Electric Vehicle Project), and Highly Modularized Power Electronic Systems.

ii. Towards a 100% Renewable Energy System

Date: 2023/08/11

Attendance: Virtual Seminar, 40+

The forum is organized and sponsored by Prof. Huang-Jen Chiu, National Taiwan University of Science and Technology. Prof. Chiu served as the chair of this workshop. We've invited a Ramon Blaseo-Gimenez. Energy has been shown as a key element to drive the economy and welfare of citizens. Right now renewable energy is more cost effective than traditional energy and can be produced locally, which is particularly important for economies relying on energy imports. Moreover, a 100% decarbonized system is needed in order to limit global temperature rise. The Spanish and Taiwan energy system share very common characteristics. Therefore, this talk will identify the main advantages and challenges towards a 100% renewable system in Taiwan and in Spain, lessons learnt and a view of the new enabling technologies towards a 100% renewable system.

iii. A Single-Stage High-Frequency-Link Modular Three-Phase LLC AC-DC Converter

Date: 2023/09/25

Attendance: Virtual Seminar, 30+

The forum is organized and sponsored by Prof. Huang-Jen Chiu, National Taiwan University of Science and Technology. Prof. Chiu served as the chair of this workshop. We've invited a Tomokazu Mishima, Ph.D., Associate Professor, Department of Marine Engineering, Graduate School of Maritime Sciences, Kobe University, Japan. His research interests include soft-switching dc-dc converters, resonant converters, and high frequency inverters for industrial, automotive, and renewable energy applications. He is the recipient of the Best Paper Award in the 8th IEEE International Conference on Power Electronics and Drive Systems (IEEE-PEDS 2009), the Best Oral Presentation Award in the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), and IEEE Transactions on Power Electronics Prize Paper Award (2022).

iv. The 6th IEEE International Future Energy Electronics Conference (IFEEC 2023)

Date: 2023/11/20-2023/11/23

Attendance: Virtual Conference, 300+

The 6th IEEE International Future Energy Electronics Conference (IFEEC 2021) was held during November 20~23, 2023 at Sydney, Australia. The general chair is Prof. Dylan Lu from School of Electrical and Data Engineering University of Technology Sydney. Every two years, the conference brings together researchers, industry professionals and students from around the world to present and discuss the latest developments and innovations in power conversion, renewable energy, and the many emerging areas of power electronics.

## **19. Chapter Name: Instrumentation and Measurement Society Taipei Chapter (IM09)**

One of the merits granted to the chapter members is free or discounted admission to the chapter activities, which are listed below in chronological order.

### **i. IEEE IMS Technical Lecture Given by Professor Fuqian Yang from the Department of Chemical and Materials Engineering at the University of Kentucky, USA – *Green Synthesis of Halide Perovskite Nanocrystals (CsPbBr<sub>3</sub> and CH<sub>3</sub>NH<sub>3</sub>PbBr<sub>3</sub>)***

Time: 04/28/2023; 11:00 a.m.- 12:30 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 25

IEEE Member Attendance: 10

Invite Students: Yes

Dr. Fuqian Yang is a professor in the Department of Chemical and Materials Engineering at the University of Kentucky. Dr. Yang has established a vigorous research program in the University of Kentucky in green synthesis of semiconductor nanocrystals, synthesis of ultrafine metallic materials, diffusion-induced stress, multiscale micromechanical testing and characterization, including nanoindentation, atomic force microscopy, microindentation, and dynamic mechanical behavior. The technical seminar of “Green Synthesis of Halide Perovskite Nanocrystals (CsPbBr<sub>3</sub> and CH<sub>3</sub>NH<sub>3</sub>PbBr<sub>3</sub>)” was delivered on April 28, 2023.

### **ii. Chapter Feature Activity: Taiwan ALD/ALE Equipment Development Virtual Workshop**

Time: 09/04/2023; 1:00 p.m.-5:20 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 150

IEEE Member Attendance: 35

Invite Students: Yes

Event Description: IEEE IMS Technical Workshop entitled “ALD Equipment Development Workshop” was held on September 4, 2023. The IEEE IMS Taipei Section Chapter Chair gave an opening speech and provided technical assistance in coordinating the workshop. Four professional experts in the field were invited to the workshop, including Prof. Seiji Samukawa from National Yang Ming Chiao Tung University, Mr. Chao-Ching Cheng from tsmc, Dr. Christian Dussarrat from Air Liquide, and Mr. Yung-Shun Liao from MSScorps Co. Ltd.

iii. **IEEE IMS Technical Lecture** Given by **Dr. Tadaaki Nagao** from the National Institute for Materials Science at Japan – *Planar nanophotonic structures for photothermal and emitter device applications*

Time: 09/05/2023; 11:00 a.m.- 12:30 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 25

IEEE Member Attendance: 10

Invite Students: Yes

Dr. Tadaaki Nagao has joined National Institute for Materials Science in 2004 and currently serving as a Group Leader and MANA Principal Investigator. His research interest lies in elucidating new optical functionalities at the surfaces of nanomaterials, and applying them for radiative energy transfer/conversion. The technical seminar of “Planar nanophotonic structures for photothermal and emitter device applications” was delivered on Septmeber 5, 2023.

iv. **IEEE IMS Technical Lecture** Given by **Professor Reza Zoughi** from the Electrical and Computer Engineering (ECpE) at Iowa State University, USA – *Microwave and Millimeter Wave Evaluation of Multi-Layered Structures*

Time: 09/12/2023; 11:00 a.m.- 12:30 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 45

IEEE Member Attendance: 15

Invite Students: Yes

Prof. Reza Zoughi is is the Kirby Gray (Battelle) Chair in Engineering and a Professor Electrical and Computer Engineering (ECpE) at Iowa State University (ISU). He is also the Director of Center for Nondestructive Evaluation (CNDE) at ISU. He served as the Schlumberger Endowed Professor of Electrical and Computer Engineering at Missouri University of Science and Technology (Missouri S&T) from January 2001 to August 2019. Prior to joining Missouri S&T and since 1987 he was with the Electrical and Computer Engineering Department at Colorado State University (CSU), where he was a professor and established the Applied Microwave Nondestructive Testing Laboratory (amntl) (<http://amntl.mst.edu/>). Dr. Zoughi held the position of Business Challenge Endowed Professor of Electrical and Computer Engineering from 1995 to 1997 while at CSU. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and a Fellow of the American Society for Nondestructive Testing (ASNT).

Prof. Zoughi is invited and delivering a technical seminar of “ Microwave and Millimeter Wave Evaluation of Multi-Layered Structures" on September 12, 2023.

v. Chapter **Feature Activity: The 15<sup>th</sup> NARLabs *i*-ONE Instrument Technology Innovation**

**Competition**

Time: 10/14/2023; 09:00 a.m.-7:00 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 45

IEEE Member Attendance: 15

Invite Students: Yes

Event Description: NARLabs *i*-ONE Instrument Technology Innovation Competition was a student innovation competition jointly held by the IMS Taipei Chapter, Taiwan Instrument Research Institute, and ASME Taiwan Section from August through October. At the year of 2023, *i*-ONE entered its 15th year and has attracted nearly 90 students from Taiwan countries to participate in. 16 proposals from two levels (the High School Level and the College & Above Level) were selected to the final competition and presented their ideas on October 14, 2023. All the participants had showed the impressive designs and amazed the committee. During the final competition, participants had the opportunity to demonstrate their workpiece and observed others at the same time. The awards and their prizes (NTD \$350,000 in total) and 2 an Ionex electric scooters sponsored by Kwang Yang Motor Co. Ltd. were presented at the award ceremony right after the competition.

This year, the winner of the High School Level this year was the students from Taipei Municipal Da'an Vocational High School, with their presentation entitled “Study of 5-axis CNC Machine”. The winner of the College & Above Level was the group from National Taiwan University, with their presentation entitled “High performance portable MALDI-TOF mass spectrometer”.

vi. Chapter **Feature Activity: Optical Systems Integration R&D Consortium Spring Workshop**

Time: 11/25/2023; 11:00 a.m.-7:00 p.m.

City: Hsinchu

Country: Taiwan

Guest Attendance: 80

IEEE Member Attendance: 15

Invite Students: No

Event Description: IEEE IMS Taipei Section Chapter sponsored the annual featured activity - Optical Systems Integration R&D Consortium Winter Workshop. This consortium attains to reinforce understanding between the academia and industry, and achieves the goal of “Academia-Industry Translation for Entrepreneur Initiative.” Technical communication meetings and short-term training courses are channels for bilateral connections. In 2023, the consortium spring workshop was held in Taichung. Around 80 persons from the academia and industry participated in this event. During the workshop, two distinguished professionals were invited to share their

expertise, including Prof. Chien-Chun Chen from the Department of Engineering and System Science, National Tsing Hua University, Prof. Fu-Jen Kao from the Institute of Biophotonics, National Yang Ming Chiao Tung University, and Mr. Sam Wu, the Chairman of Samwell Testing Inc.

## **20. Chapter Name: Information Theory Society Taipei Chapter (IT12)**

The major activities of the information Theory Society, Taipei Chapter in 2023 are as follows:

- i. The 2023 IEEE Taiwan Spring Workshop on Information Theory and Communications, as part of the 2023 Taiwan Telecommunications Annual Symposium, was held at National Central University, Taoyuan, Taiwan, from January 16 to January 17, 2023. The website of the symposium is available at <http://www.mostcep.tw/telecom2023/index.php>. One of the main goals of Taiwan Telecommunications Annual Symposium is to offer a platform that facilitates information exchange and academic discussions among the researchers in Taiwan in the fields of information theory and communications. The symposium was co-sponsored by IEEE ITSoc Taipei Chapter, ITSoc Tainan Chapter, IEEE ComSoc Taipei Chapter, IEEE ComSoc Tainan Chapter, and the National Science and Technology Council (NSTC). There are 4 invited talks from the industry, 4 NSTC outstanding project sharing talks, and 6 invited IT-Comm talks from the academia, all in the fields of information theory and communications. There are 123 participants, including 13 from the industry and the government, 40 professors and 70 students.
- ii. The 2023 IEEE Taiwan Fall Workshop on Information Theory and Communications was held at National Kaohsiung University of Science and Technology on August 22, 2023, co-sponsored by IEEE ITSoc Taipei Chapter, ITSoc Tainan Chapter, IEEE ComSoc Taipei Chapter, IEEE ComSoc Tainan Chapter, and the National Science and Technology Council. The workshop provides seven invited talks for professors and graduate students majoring in communication and information theory in Taiwan. These presentations come from renowned experts in their fields. There are 92 participants, including 9 from industry and government, 51 professors, and 32 students.

## **21. Chapter Name: Magnetics Society Taipei Chapter (MAG33)**

i. Distinguished Lecturers 2023:

Speaker: J. Ping Liu, UT Arlington, Arlington, TX

Title: Magnetic Hardening in Low-Dimensional Ferromagnets

Time: 5/25, 11:00am-12:00pm

Location: National Taiwan University

ii. Distinguished Lecturers 2023:

Speaker: Professor Yoichiro Tanaka, Tohoku University



Title: Magnetic Data Storage Technology: From the Invention of Perpendicular Magnetic Recording to Social Integration

Time: 07/24, 10:00am-11:00am

Location: Minghsin University of Science and Technology

iii. Other Activities:

2023 Taiwan Association Magnetic Technology (TAMT) Annual Meeting

Time: 7/24-7/26

We invited the following speakers (selected):

- (1) Chi-Feng Pai: National Taiwan University
- (2) Chao-Yao Yang: National Yang-Ming Chiaotung University (NYCU)
- (3) She-Yun Chen: National Taiwan University of Science and Technology
- (4) Hua-Shu Hsu: National Pingdong University
- (5) Danru Qu: National Taiwan University
- (6) Ssu-Yen Huang: National Taiwan University
- (7) Po-Yao Wang: National Changhua University of Education

**22. Chapter Name: Microwave Theory and Techniques Society Taipei Chapter (MTT17)**

**23. Chapter Name: Power Electronics Society Taipei Chapter (PEL35)**

6. "PELS-IAS Technical Virtual Talk"

- Speaker: Dr. Daijiry Narzary
- Seminar Title: Multi Sensor Fault Detections in Industrial Drives
- Date: March 14, 2023, (Tue)
- Time: 10:00-11:00 am (Taiwan Time)
- Location: Virtual meeting

IEEE Member Attendance: 9

Guest Attendance: 16

7. "PELS-IAS Distinguished Lecturer Virtual Talk"

- Speaker: Dr. Keyue Ma Smedley, IEEE PELS Distinguished Lecturer and University of California at Irvine Professor
- Seminar Title: Breaking the Barrier of Bulky Magnetics in Power Conversion: Advances in Resonant Switched-Capacitor Converters
- Date: March 30, 2023, (Thu)
- Time: 9:00-10:15 am (Taiwan Time)
- Location: Virtual meeting

IEEE Member Attendance: 4

Guest Attendance: 12

8. "PELS International Academic Exchange Dinner"

- Invitee: Alan Mantooth, the Past President of IEEE PELS and a Distinguished Professor at the University of Arkansas, USA
  - Purpose: Provided academic exchange opportunities for IEEE/PELS member
  - Date: May 27, 2023, (Tue)
  - Time: 6:00-7:30 pm (Taiwan Time)
  - Location: 曉鹿鳴樓 Shanghainese Restaurant
- IEEE Member Attendance: 11  
Guest Attendance: 0

9. "PELS Distinguished Speaker Talk"

- Speaker: Dr. Alan Mantooth, the past president of IEEE PELS and a distinguished professor at the University of Arkansas, USA
  - Seminar Title: The GRAPES Global Institute and The Pursuit of Carbon Neutrality
  - Date: May 30, 2023, (Tue)
  - Time: 2:00-3:30 pm (Taiwan Time)
  - Location: NTU EE2 R105
- IEEE Member Attendance: 15  
Guest Attendance: 52

10. "PELS Day Celebration"

**【Talk 1】**

- Speaker: Prof. Bryan Pong, National Taiwan University of Science and Technology
- Seminar Title: Design of Power Converters by AI

**【Talk 2】**

- Speaker: Prof. Herbert L. Ginn, University of South Carolina, Columbia, SC, USA
  - Seminar Title: Electrical Pollution– When Power Electronics Don't Play Well with Others
  - Date: June 20, 2023, (Tue)
  - Time: 1:00-2:30 pm (Taiwan Time)
  - Location: NTU EE2 R142
- IEEE Member Attendance: 10  
Guest Attendance: 20

11. "Joint Taipei Section Technical Seminar"

**【Talk 1】**

- Speaker: Dr. Jeehoon Jung, Professor of Dept. of Electrical Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea.
- Seminar Title: Advanced Power Electronics Research of UNIST APIPEL: Hybrid Transformer, Bidirectional & Multiport Converters, Talkative DC Grid, Induction Heating, and Power HILS

### 【Talk 2】

- Speaker: Dr. Suyong Chae, Professor of Electrical Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea.
- Seminar Title: Reliability Issues in Power Electronics Converters & Model Predictive Control

### 【Talk 3】

- Speaker: Dr. JongWon Shin, Associate Professor of Chung-Ang University, Seoul, South Korea
- Seminar Title: Recent development of low-voltage dc-dc converters in Hyundai Motor Company EVs
- Date: November 9, 2023, (Thu)
- Time: 3:30-5:00 pm (Taiwan Time)
- Location: NTU EE2 R105

IEEE Member Attendance: 15

Guest Attendance: 75

### 12. "IEEE PELS-NTU Delta Center Joint Technical Seminar"

- Speaker: Andy Chuang(莊淵棋), Vice President of Business Development at GaN Systems
- Seminar Title: Development opportunities for compound semiconductors in the sustainable net-zero era
- Date: November 14, 2023, (Tue)
- Time: 3:30-5:30 am (Taiwan Time)
- Location: NTU EE2 R105

IEEE Member Attendance: 12

Guest Attendance: 13

## 24. **Chapter Name: Product Safety Engineering Society Taipei Chapter (PSE43)**

## 25. **Chapter Name: Power and Energy Society Taipei Chapter (PE31)**

### i. PES Taipei Webinar – *Energy Transition and Applications of Energy Storage System*

Time: May 17, 2023; 2:00PM-3:30 PM

Country: Taiwan

Location: Internet

Speaker: Dr. I-Pin Chen, CEO of Ensilience Co., Ltd.

IEEE Member Attendance: 33

Guest Attendance: 201

Invited Students: Yes

### ii. PES Taipei Webinar – *Overview of Greenhouse Gas Inventory*

Time: June 21, 2023; 10:30AM-12:00 PM

Country: Taiwan

Location: Internet

Speaker: Shih-Chieh Lin, Metal Industries Research and Development Centre

IEEE Member Attendance: 25

Guest Attendance: 95

Invited Students: Yes

iii. PES Taipei Webinar – *Certificate System of Renewable Energy and Introduction to Green Electricity Trading*

Time: July 31, 2023; 1:30PM-3:00 PM

Country: Taiwan

Location: Internet

Speaker: Dr. T. K. Chang, Taiwan Electric Research & Testing Center

IEEE Member Attendance: 32

Guest Attendance: 217

Invited Students: Yes

iv. PES Taipei Webinar – *Integrated Photovoltaic and Storage Systems and Regulations*

Time: August 28, 2023; 1:30PM-3:00 PM

Country: Taiwan

Location: Internet

Speaker: Manager Ray Wen, SEETEL NEW ENERGY Co., LTD.

IEEE Member Attendance: 23

Guest Attendance: 154

Invited Students: Yes

v. PES Taipei Webinar – *Solutions from Low-Carbon Electricity to Net-Zero Electricity*

Time: September 22, 2023; 1:30PM-3:00 PM

Country: Taiwan

Location: Internet

Speaker: CEO Rick Hsiao, Asia Hydrogen Energy Corporation

IEEE Member Attendance: 18

Guest Attendance: 85

Invited Students: Yes

vi. PES Taipei Webinar – *Microgrid Technologies and Development Trends*

Time: October 23, 2023; 1:30PM-3:00 PM

Country: Taiwan

Location: Internet

Speaker: Dr. T. K. Lee, CEO of Taiwan microgrid technology Co., Ltd.

IEEE Member Attendance: 22

Guest Attendance: 98

Invited Students: Yes

vii. PES Taipei Webinar – *Current Status and Prospects of Virtual Power Plants in Taiwan*

Time: November 27, 2023; 1:30PM-3:00 PM

Country: Taiwan

Location: Internet

Speaker: Ivan Cheng, CEO of Ancillary Power Co., Ltd.

IEEE Member Attendance: 18

Guest Attendance: 85

Invited Students: Yes

## **26. Chapter Name: Photonics Society Taipei Chapter (PHO36)**

Chapter PHO36 has submitted three L31 meeting reports in this year:

Chapter PHO36 has submitted two L31 meeting reports in this year:

In this year, PHO36 has two big events plus several workshops and camps.

- i. 4/21/2023: Next-Generation Photonic and Microwave Technologies for Quantum Sensing and Digital twins 4/21/2023 Whole day : We organized a workshop on the topic of quantum key distribution, quantum sensing, single photon detectors and digital twins. We invited Ansys to present their new tools for design the quantum photonic components and circuits. And then we invited Prof. GR Lin and Prof. YH Chen to present their work on QKD system and integrated quantum sources for sensing applications. Then we invited Egistec to present their product of SPAD and Prof. JW Hsu for his work in Lidar. In the afternoon, we invited 3 key topics in sub TH Antenna array, CMOS SPAD and VCSELs. Finally, we invited the IEEE fellow Shin-tson Wu to give a talk in AR/VR for digital twins. There were more than 170 participants joined this workshop. About 30 to 40 IEEE members joined this seminar.
- ii. 4/17/2023: IEEE distinguished lecture Prof. Patric Fay visited NTU and gave a invited talk in IEEE Photonic society worsshop. Attendance: 30
- iii. 12/01/2023: The Optics & Photonics Taiwan, International Conference-Annual Meeting of Taiwan Photonics Society, 2023 (from Dec. 1 to Dec. 3, 2023): This is an annual meeting of Taiwanese photonic community, and also serves for the international conference for photonics. The conference is held in National Cheng-kung University in Tainan Taiwan. The IEEE photonic society Taipei Chapter is glad to support this conference for many years as a technical sponsor. As an important venue for students' research, this conference also provides 10 Best Student Oral Paper Awards that are supported by Taipei Chapter of IEEE Photonic Society. There are about 1000 people participating the conference (including students, researchers, faculty members, and professionals) and more than 100 IEEE members (Taipei and Tainan Chapter also participated in this conference. The annual meeting of IEEE Photonics Society Taipei Chapter was also held during this time. We invited IEEE Fellow Wood-Hi Cheng to give a invited talk for IEEE fellow applications. Then attendance for the branch member meeting: 70.

## **27. Chapter Name: Robotics and Automation Society Taipei Chapter (RA24)**

Chapter RA24 hosted the following 2 events in 2023

- i. Robotics Local Session - RA-L and ICRA 2023
  - Date: 21 Apr 2023, Attendance: 25, about 10 IEEE Members
  - Time: 12:10 PM to 01:15 PM
  - Where: EE623 (陽明交大工程五館)
  - Agenda:

- 12:10: Learning Sim-to-Real Dense Object Descriptors for Robotic Manipulation (Prof. I-Chen Wu's team, published in ICRA 2023)
  - 12:25: LGCNet: Feature Enhancement and Consistency Learning Based on Local and Global Coherence Network for Correspondence Selection (Prof. Super Chen's team, published in ICRA 2023)
  - 12:40: Auto-Tuned Motion Scaling in Teleoperation Based on Human Reaction Model Identification (Prof. Cheng-Wei Chen's team, published in RA-L and ICRA 2023)
  - 12:55: Curriculum Reinforcement Learning from Avoiding Collisions to Navigating among Movable Obstacles in Diverse Environments (Prof. Nick Wang's team, published in RA-L)
  - 1:10: General Discussions and Closing
- ii. 機械系工程系國際化演講系列 (hosted by Prof. Dylan Tsai)
- Date: 12/04/2023, Attendance: Attendance 15, about 3 IEEE members
  - Venue: EE436, National Yang Ming Chiao Tung University, Hsinchu, Taiwan
  - Topics and Speakers:
    - ON-CHIP CONTINUOUS PARTICLE/CELL SEPARATION THROUGH MICROPILLAR ARRAYS by Naotomo Tottori, Assistant Professor, Kyushu University
    - CELL MANIPULATION WITH HIGH-SPEED & HIGH-RESOLUTION BASED ON "FLOW REDUCTION MECHANISMS" by Shinya Sakuma, Associate Professor, Kyushu University
    - MASSIVE INTEGRATED ON-CHIP GEL ACTUATOR FOR SINGLE CELL MANIPULATIONS by Takeshi Hayakawa, Associate Professor, Chuo University
    - NANOSCOPIC DESIGN OF MOLECULAR DELIVERY USING "NANOPARTICLES BASED ON LIPIDS" by Niko Kimura, Senior Assistant Professor, Tokyo University of Agriculture and Technology
    - LCI-S AND TDCSS, THE PIONEERING TOOLS TO REVEAL CELLULAR SECRETORY RESPONSES by Yoshitaka Shirasaki, Associate Professor, The University of Tokyo
    - PROGRAMMABLE DNA-METAL HYBRID
    - STRUCTURES WITH THE ABILITY OF INTERACTING WITH BIOMOLECULES by Maasa Yokomori, Assistant Professor, Kyushu University

**28. Chapter Name: Reliability Society Taipei Chapter (RL07)**

i. 2023.09.28-29

Mobile Computing Workshop

- City: Keelung
  - Country: Taiwan
  - Website: <https://sites.google.com/view/mc-2023/main>
  - Attendance: 49
- ii. 2023.09.28-29
  - The Workshop on Wireless, Ad Hoc and Sensor Networks
  - City: Keelung
  - Country: Taiwan
  - Website: <https://sites.google.com/view/wasn2023/index>
  - Attendance: 58
- iii. 2023.03.13
  - The Technical Lecture
  - Topic : Approximate Logic Synthesis by Genetic Algorithm with an Error Rate Guarantee
  - Speaker : Distinguished Professor Chun-Yao Wang, National Tsing Hua University
  - Attendance:21

**29. Chapter Name: Sensors Council Taipei Chapter (SEN39)**

i. Technical Talk

Prof. Tai gave a talk with title, “Panoramic Intra-oral Diagnostic and Health Informatics System,” at the U.S. National Academy of Medicine and Academia Sinica’s Healthy Longevity Global Grand Challenge Award at Taipei Tech Arena, Taipei City, Taiwan, on August 4th 2023. Estimated attendees: 40.

ii. Technical Talk

Prof. Tai gave a talk with title, “Wearable Bioelectronic Devices and Their Surface Materials,” at 2023 Biomedical Engineering and Materials Analysis Curriculum at the Research Building, Room R1-B1122 Auditorium, National Health Research Institutes, Miaoli County, Taiwan on August 24th, 2023. Estimated attendees: 100

iii. Technical Talk

Prof. Tai gave a talk with title, “Microscopy-Guided 3-D Reconstruction of Nanodendrites in Biosensors,” at 2023 IEEE Sensors at Hilton Vienna Park, Vienna, Austria on October 31st, 2023. Estimated attendees: 800

**29. Chapter Name: Systems, Man, and Cybernetics Society Taipei Chapter (SMC28)**

**30. Chapter Name: Systems, Man, and Cybernetics Society Taipei Chapter (SMC28)**

- i. The Invited Talk - Real-world Application of EEG and Brain-Computer Interfaces, Prof. Tzyy-Ping Jung, IEEE Fellow
  - Date: April 12, 2023.
  - Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan
  - Attendance: 35

Topic: Real-world Application of EEG and Brain-Computer Interfaces

Dr. Tzyy - Ping Jung is the Co - Director of the Center for Advanced Neurological Engineering, an Associate Director of the Swartz Center for Computational Neuroscience, and an Adjunct Professor of the Department of Bioengineering at the University of California San Diego, CA, USA. He is also an Adjunct Professor of the College of Education at National Tsing Hua University, and the Department of Eledical Engineering at National Chiao Tung University in Taiwan. Dr. Jung established transformative techniques for applying blind source separation to decompose multichannel EEG / MEG / ERP and fMRI data and was elevated to an IEEE Fellow for his contributions to blind source separation for biomedical applications in 2015. He is also a Fellow of Asia - Pacific Artificial Intelligence Association (AAIA). Dr. Jung's research emphasis has been placed on the integration of cognitive science, computer science and engineering, neuroscience, bioengineering, and electrical engineering. Dr. Jung's work is truly interdisciplinary and well - cited by peers (38,300 total citations and h - index = 83, according to Google Scholar). He has published many well - cited articles in prestigious scientific journals such as Science, PNAS, PLoS Biology, and J. Neurosciences, engineering journals such as Proceedings of the IEEE, IEEE Trans Biomedical Engineering, and clinical journals such as Gerontology and JAMA Ophthalmology.

- ii. The Invited Talk - Learning Based Video Coding by Data-driven Techniques and Advanced Models, Chair Professor. Sam Kwong, IEEE Fellow

Date: July 20, 2023.

Venue: National Taiwan University of Science and Technology, Taipei, Taiwan

Attendance: 60

Topic: Learning Based Video Coding by Data-driven Techniques and Advanced Models

Dr. Sam Kwong, IEEE Fellow, served as Head and Professor of the Department of Computer Science, at the City University of Hong Kong, from 2012 to 2018. He is currently a chair professor of the Computer Science Department of City University of Hong Kong.

Kwong has extensive experience managing university Computer Science departments and academic publications. He is the associate editor of leading top 5% IEEE transaction journals based on the recent JCR report, such as IEEE transactions on Evolutionary Computation, the IEEE Transactions on Industrial Informatics, and the IEEE Transactions on Industrial Electronics. In addition, his prolific research publication record has reached over 200 top ranked journal papers, including over 100 IEEE journals. His works have been cited over 18,000 times according to Google Scholar with an h-index of 55. He has filed 13 US patents, of which 6 have been granted. He has been the distinguished lecturer of IEEE SMCS since 2018 and delivers two DL lectures yearly to promote IEEE SMC society and cutting-edge cybernetics technology. He also frequently delivers Keynote speeches in IEEE SMCS supported conferences. In 2014, he was elevated to IEEE Fellow for his contributions to optimization techniques in cybernetics and video coding. Kwong's involvement in the multiple facets of IEEE throughout the years has been extensive and committed. He has served as an Invited Speakers for many different IEEE conferences. With



respect to SMCS, he serves IEEE SMCS as Hong Kong SMCS chapter chairman, a Board Member, Conference Coordinator, Membership coordinator and a Member of Long Range Planning and Finance Committee, Vice President of Conferences and Meetings, Vice President of Cybernetics. He led the IEEE SMC Hong Kong Chapter to win the Best Chapter Award in 2011 and awarded Outstanding Contribution Awards for his contributions to SMC 2015. Currently, he is the president of IEEE Systems, Man and Cybernetics Society.

iii. The Invited Talk - Invited IEEE CIS Distinguished Lecturer Talk, Prof. Nikhil R Pal, IEEE Fellow

Date: September 11, 2023

Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan

Attendance: 58

Topic: In this “bigger the better” era, how relevant is dimensionality reduction!

Nikhil R Pal is a Professor in the Electronics and Communication Sciences Unit, and he was the founding Head of the Center for Artificial Intelligence and Machine Learning of the Indian Statistical Institute. His current research interest includes brain science, computational intelligence, machine learning and data mining. Professor Nikhil Pal is a recipient of the 2015 IEEE Computational Intelligence Society (CIS) Fuzzy Systems Pioneer Award and 2021 IEEE CIS Meritorious Service Award. He has served as the General Chair, Program Chair, and co-Program chair of several conferences. He has been a Distinguished Lecturer of the IEEE CIS (2010-2012, 2016-2018, 2022-2024) and was a member of the Administrative Committee of the IEEE CIS (2010-2012). He has served as the Vice-President for Publications of the IEEE CIS (2013-2016) and the President of the IEEE CIS (2018-2019). Professor Nikhil Pal is a Fellow of the West Bengal Academy of Science and Technology, Institution of Electronics and Tele Communication Engineers, National Academy of Sciences, India, Indian National Academy of Engineering, Indian National Science Academy, International Fuzzy Systems Association (IFSA), The World Academy of Sciences, and a Fellow of the IEEE, USA.



iv. The Invited Talk - Decomposed Fuzzy Systems, Chair Prof. Shun-Feng Su, IEEE Fellow

Date: September 11, 2023

Venue: National Yang Ming Chiao Tung University, Hsinchu, Taiwan

Attendance: 58

Topic: Decomposed Fuzzy Systems

Dr. Su is a Chair Professor of the Department of Electrical Engineering, National Taiwan University of Science and Technology, Taiwan, R.O.C. He also is the Vice President for research in that university since 2023. He is a Fellow for various societies, including IEEE, IFSA, CACS, TFSA, and RST. He has published more than 300 refereed journal and conference papers in the areas of robotics, intelligent control, fuzzy systems, neural networks, and non-derivative optimization. His current research interests include intelligent control, computational intelligence, machine learning, intelligent manufacturing, data science, and robotics. Dr. Su is very active in various international/domestic professional societies. He now is the Vice President for publication of the IEEE SMC society. He also serves as a board member of various academic societies. Dr. Su also acted as General Chair, Program Chair, or various positions for many international and domestic conferences. Dr. Su currently serves as associate editors of IEEE Transactions on Cybernetics, of IEEE Transactions on Fuzzy Systems, and of Information Science, a senior editor and associate editor of IEEE Access, the executive editor of the Journal of the Chinese Institute of Engineers, and an area editor and associate editor of International Journal of Fuzzy Systems.



v. Technically\_Sponsored 2023 Taiwan-Japan Bilateral Smart Medicine Workshop

Workshop topic: **State-of-the-Art AI Technologies for Biomedical Imaging Detection**

Date: Oct. 13, 2023.

Venue: National Yang Ming Chiao Tung University, Taipei, Taiwan

Attendance: 56

The IEEE SMC, Taipei Chapter organized the 2023 Taiwan-Japan Bilateral Smart Medicine Workshop on October 13, 2023, at the National Yang Ming Chiao Tung University, Yangming Campus. The SMC Chapter Chair, Professor Li-Wei Ko, served as the host for this activity. The workshop's theme focused on "State-of-the-Art AI Technologies for Biomedical Imaging Detection," facilitating discussions and exchanges between Japan and Taiwan in the application of AI in biomedical imaging detection.

The workshop featured five keynote speeches, summarized as follows:

1. Professor Kohsuke Kudo from Hokkaido University Graduate School of Medicine, Japan, delivered a lecture titled "Development and Functionality of the Brain Perfusion Imaging Analysis Program PMAneo."

2. Vice President and Chair Professor John S. Kuo from China Medical University, Taiwan, delivered a lecture titled "Advanced Brain Tumor Imaging with Theranostic Alkylphosphocholine Analogs."

3. Professor Yu-Te Wu from National Yang Ming Chiao Tung University, Taiwan, offered insights into "Convolutional Neural Deep Learning Network for Automatically Labeling Brain Tumors."

4. Professor Ryo Itabashi from Iwate Medical University, Japan, discussed the "Implementation of Quantitative Evaluation of DWI Ischemic Core Volume in Patients with Large Vessel Occlusion Using PMAneo in Clinical Practice."

5. Professor Kai-Cheng Hsu from China Medical University Hospital, Taiwan, shared his expertise on "Pioneering the Future: AI-driven Techniques in Stroke Detection."

This event gathered 56 attendees, engaging in productive discussions and exchanges throughout the workshop.



vi. Technically Co-sponsored IFUZZY 2023

Conference title: 2023 International Conference on Fuzzy Theory and Its Applications (iFUZZY 2023)

Date: Oct. 26-29, 2023.

Venue: National Penghu University of Science and Technology, Penghu, Taiwan

Attendance: IEEE member: 100, Guests: 200

IEEE SMC, Taipei Chapter co-organized the 2023 International Conference on Fuzzy Theory and Its Application (IFUZZY 2023) held on 26-29 Oct., 2023, Penghu, Taiwan. (Website:



<https://sites.google.com/view/ifuzzy2023/about-ifuzzy2023>). The SMC Chapter Chair, Prof. Li-Wei Ko, served as a Chair of the SS-04: Computational intelligence in biomedical engineering. IFUZZY 2023 is soliciting novel research results on fuzzy theory and its applications and related topics. This event provides scientists, engineers, and practitioners a great opportunity to present the latest design concepts, research results, developments, and applications and facilitates interactions between scholars and practitioners.

vii. Technically Co-sponsored CACS 2023

Conference title: 2023 International Automatic Control Conference (CACS 2023)

Date: Oct. 26-29, 2023.

Venue: National Penghu University of Science and Technology, Penghu, Taiwan

Attendance: IEEE member: 100, Guests: 200

IEEE SMC, Taipei Chapter technically sponsored the 2023 International Automatic Control Conference Oct. 26-29, 2023, Penghu, Taiwan. (Website: <https://sites.google.com/view/cacs2023/about-cacs2023>). The Chapter Chair, Prof. Li-Wei Ko, served as a Chairman of the Conference Session SS-04-2 A25: Computational Intelligence in Signal Processing and Control. This conference will provide a great opportunity for scientists, engineers, and practitioners to present the latest design concepts, research results, developments, and applications, as well as to facilitate interactions between scholars and practitioners.

**31. Chapter Name: Systems, Man, and Cybernetics Society Taichung Chapter (SMC28-TC)**

i. 2023 National Symposium on System Science and Engineering (NSSSE2023)

Date: 2023.06. 10~2023.06.12

Location: National Taiwan Ocean University, Taiwan

Attendance : 32

Activity :2023 National Symposium on System Science and Engineering (NSSSE2023) was a national conference that was conducted physically held on 10th-12th June, 2023. 23 accepted papers were presented in NSSSE 2023, and a lot of intensive discussion occurred among the attendees and presenters. In addition, the two lectures were given in the national conference. The talk was delivered by Prof. Jyh-Horng Chou, Fellow IEEE/IET/CACS/CSME/CIAE, who gave his lecture on " Net Zero Emissions ". The second talk was delivered by Prof. Chung-Hsien Kuo, Department of Mechanical Engineering, NTU, who gave his lecture on "Intelligent robot research and development and innovative applications". Most the attendees were impressed by this wonderful talks.

ii. The International Conference on System Science and Engineering 2023 (ICSSE 2023)

Date: 2023.07.27~2023.07.28, Physical Conference

Location: Ho Chi Minh City, Vietnam

Attendance : 100

Activity : The International Conference on System Science and Engineering 2023 (ICSSE 2023) was an international conference. ICSSE 2023, hosted by Ho Chi Minh City University of Technology and Education (Vietnam), Taiwan Association of System Science and Engineering (TASSE), National Taiwan Ocean University (Taiwan) and Rajamangala University of Technology Lanna (Thailand), will take place in Ho Chi Minh City, Vietnam during July 27-28, 2023. 72 papers were presented. This conference was aimed to provide a great opportunity for scientists, engineers, and practitioners from all over the world to present the latest system design concepts, research results, developments and applications, as well as to facilitate interactions between scholars and practitioners. In ICSSE 2023, four lectures were given in the conference. The first talk was given by Prof. Shun-Feng Su who gave his lecture on " Decomposed Fuzzy Systems ". The second talk invited Prof. Kyeong-Sik Min to give his lecture on "Processing in memory techniques with emerging memories". The third talk invited Prof. Yo-Ping Huang who gave his lecture on "AIoT and its Applications". The fourth talk invited Mr. Lim Seng Tat who gave his lecture on "The Convergence of Simulation and Data: Utilizing AI in CAE Simulation". Prof. Ching-Chih Tsai served as an ICSSE 2023 Technical program committee..

iii. 2023 International Conference on Advanced Robotics and Intelligent Systems (ARIS 2023)

Date: 2023.08.30~2023.09.01

Location: National Taiwan University of Science and Technology, Taipei, Taiwan.

Attendance : 200

Activity : The 11th International Conference on Advanced Robotics and Intelligent Systems (ARIS 2023) and the 11th National Conference on Advanced Robotics (NCAR 2023) are scheduled to take place in the vibrant city of Taipei, Taiwan, from August 30 - September 1, 2023. This year, the program committee diligently reviewed 175 submitted papers, leading to the acceptance of 173 after a thorough assessment by three reviewers. These selected papers will contribute to the conference proceedings, shaping an event that promises to be intellectually stimulating and rich with the latest advancements in the field. In ARIS 2023, four lectures were given in the conference. The first talk was given by Prof. Gursel Alici, who gave his lecture on " Soft Robotics: where are we to bring prosthetic devices closer to their natural counterparts? ". The second talk invited Prof. Matti Pietikäinen, to give his lecture on "From Local Binary Patterns to CNN-based Descriptors, With Applications to Face Analysis". The third talk invited Prof. Jia-Yush Yen, who gave his lecture on "Bipedal Controller Design to Realize Human Gaits". The fourth talk invited Mr. Neal Y. Lii, who gave his lecture on "Telerobotics in Space and on Earth: New Ways to Command Robots Among the Stars and in our Daily Lives".

Prof. Ching-Chih Tsai served as an ARIS 2023 Honorary General Chairs.

iv. The 12th International Conference on Awareness Science and Technology (IEEE iCAST 2023)

Date: 2023.11.09-11, Taichung, Taiwan

Location: Taichung, Taiwan

Activity : Chaoyang University of Technology, thus, initiated The 12th International Conference on Awareness Science and Technology (IEEE iCAST 2023), an international conference for the presentation and sharing of new advances and research results in the fields of theoretical, experimental, applied Social Sciences and applications of Awareness Science and Technology. This conference aims to bring together key experts, scholars, researchers and doctoral students from diverse fields from around the world and invite your participation.

In particular, three lectures were given in IEEE iCAST 2023. The first invited speaker, Dr. Professor YOSHIOKA Rentaro, University of Aizu, Japan, give his keynote speech on " Human-Centered Integration: Enhancing Visitor Experience through Sensor Agents, Compute Agents, and Human Interaction at Museums "; the second invited Prof./Dr. Hui Yu, (University of Portsmouth, UK) gave his lecture on " Emotion Sensing for Human-Machine Interaction ". The third invited speaker, Prof. H. Y. Mark Liao, mad his speech on " From YOLOv4 to YOLOv7" , the fourth invited speaker, Dr. Ching-Chih Tsai gave a lecture on " Key Modules, Design and Case Studies of Autonomous Mobile Robots ",

v. The 2023 International Conference on Fuzzy Theory and Its Applications (iFUZZY 2023)

Date: 2023.10.26~2023.10.29

Location: National Penghu University of Science and Technology, Penghu, Taiwan

Attendance : 130

Activity : 2023 International Conference on Fuzzy Theory and Its Applications (iFUZZY 2023) was hosted by National Penghu University of Science and Technology, Penghu, Taiwan on October 26-29, 2023. iFUZZY 2023 includes many novel research results on fuzzy theory and its applications and related topics. In iFUZZY 2023, three excellent lectures were given. The first talk was given by Prof. Mi-Ching Tsai who gave his lecture on " Innovative Industry-University Research and Development Ecosystem of Collaboration ". The second talk invited Prof. Ching-Hung Lee to give his lecture on "Artificial Intelligence in Vibration Signals Analysis and Smart Machinery Applications". The third talk invited Prof. Peng Shi, who gave his lecture on "Hybrid attacks design on Cyber-physical systems".

vi. The 2023 International Automatic Control Conference (CACS 2023)

Date: 2023.10.26~2023.10.29

Location: National Penghu University of Science and Technology, Penghu, Taiwan

Attendance : 165

Activity : The 2023 International Automatic Control Conference (CACS 2023) was hosted by the Chinese Automatic Control Society and National Chung Cheng University, Taiwan. The 17th international conference of CACS was held in Penghu, Taiwan, in order to provide a great opportunity for scientists, engineers, and practitioners to present their state-of-the-art, latest concepts, innovative research results, and novel applications, as well as to facilitate interactions

between scholars and practitioners. CACS 2023 was made by presenting novel research results in all aspects of control, automation, robotics, servomechanisms, and related topics. Accepted full papers can be included in IEEE Xplore and EI indexed database. Best paper awards were given to those with outstanding achievements. Selected high-quality papers were published in the Special Issues of Asian Journal of Control (AJC) and International Journal of Fuzzy Systems (IJFS).

In particular, three lectures were given in CACS 2023. The first invited speaker, Prof. Mi-Ching Tsai, give his keynote speech on " Innovative Industry-University Research and Development Ecosystem of Collaboration "; the second invited Prof. Ching-Hung Lee gave his lecture on " Artificial Intelligence in Vibration Signals Analysis and Smart Machinery Applications ". The third invited speaker, Prof. Peng Shi., made his speech on " Hybrid attacks design on Cyber-physical systems ".

Prof. Ching-Chih Tsai served as the advisory to support many program and conference matters of CACS 2023

vii. SMC Taichung Chapter organized a lunch party to promote Taichung Chapter, IEEE SMCS, on 16 November, 2023.

Total Participants:34

viii.SMC Taichung Chapter organized a Christmas dinner party to let all the chapter members enjoy food and friendship on 23 December, 2023.

Total Participants:43

ix.SMC Taichung Chapter organized a mountain hiking activity to promote and recruit new members to join Taichung Chapter, IEEE SMCS, on 15 January, 2024

Total Participants:14

### **32. Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**

In 2023, we have organized **11 events** with a total number of **31 presentations**; a total number of attendees is **~550 persons**.

#### **i. 2023 ISSCC Speaker Rehearsal Program**

Title: IEEE SSCS Annual Member Meeting (4 presentations)

Date: Feb. 15, 2023

Place: NYCU, Hsinchu, Taiwan

Attendance: 8

#### **ii. ISSCC Highlighted Paper Review Forum (11 presentations)**

Date: April 14, 2023

Place: online

Attendance: 150

**iii. Technical Talk**

Title: Noise-shaping SAR ADCs and Low-power SAR-based Temperature Sensors (1 presentation, Prof. Pieter Harpe, Eindhoven University of Technology, The Netherlands)

Date: April. 20, 2023

Place: NTU, Taipei, Taiwan

Attendance: 45

**iv. Technical Talk**

Title: SerDes Design Challenges from Impairments (1 presentation, Dr. Chung-Chun (CC) Chen, Silicon Creations, USA)

Date: May 8, 2023

Place: NYCU, Hsinchu, Taiwan

Attendance: 28

**v. SSCS Taipei Chapter Meeting**

Title: IEEE SSCS Annual Member Meeting (2 presentations)

Date: Aug. 2, 2023

Place: E-Da Royal Hotel

Attendance: 35

**vi. Technical Talk**

Title: Digital Gate ICs for Driving and Sensing Power Devices to Achieve Low-Loss, Low-Noise, and Highly Reliable Power Electronic Systems (1 presentation, Prof. Makoto Takamiya, The University of Tokyo, Japan)

Date: August 9, 2023

Place: NYCU, Hsinchu, Taiwan

Attendance: 25

**vii. Technical Talk**

Title: A Low-power 28-GHz Beamforming Receiver with On-Chip LO Synthesis (1 presentation, Prof. Behzad Razavi, UCLA, USA)

Date: Sept. 22, 2023

Place: NTU, Taipei, Taiwan

Attendance: 135

**viii. 2023 A-SSCC Press Conferences (3 presentations)**

Date: Oct. 27, 2023

Place: NTU Alumni Center, Taipei, Taiwan

Attendance: 35

**ix. 2024 ISSCC Press Conferences (6 presentations)**

Date: Nov. 22, 2023

Place: Sheraton Grand Taipei Hotel, Taipei, Taiwan

Attendance: 35 (including ISSCC FE officers, Taiwan committee members, authors, VIP, press)

**x. DL Technical Talk**



Title: Hybrid DC-DC Converter Topologies: From Seeds to Leaves (1 presentation, SSCS DL Prof. Yan Lu, University of Macau, China)

Date: Dec. 15, 2023

Place: online

Attendance: 50

### 33. **Chapter Name: Vehicular Technology Society Taipei Chapter (VT06)**

IEEE VTS Taipei Chapter has sponsored or co-sponsored 8 events during the year of 2023, each of which is described in more detail as follows:

#### 1. Technical Activities

##### i. 2023 Summer School on Information/Communication/Vehicular Theories and Technologies

Time: August 14, 2023; 09:00 a.m.- August 15, 2023: 05:00 p.m. (GMT+8)

Place: the ZyXEL Lecture Hall of Engineering IV Building, Kuanfu Campus, NYCU, Taiwan

Country: Taiwan

Talks: 6

Attendance: 72+

Event Description:

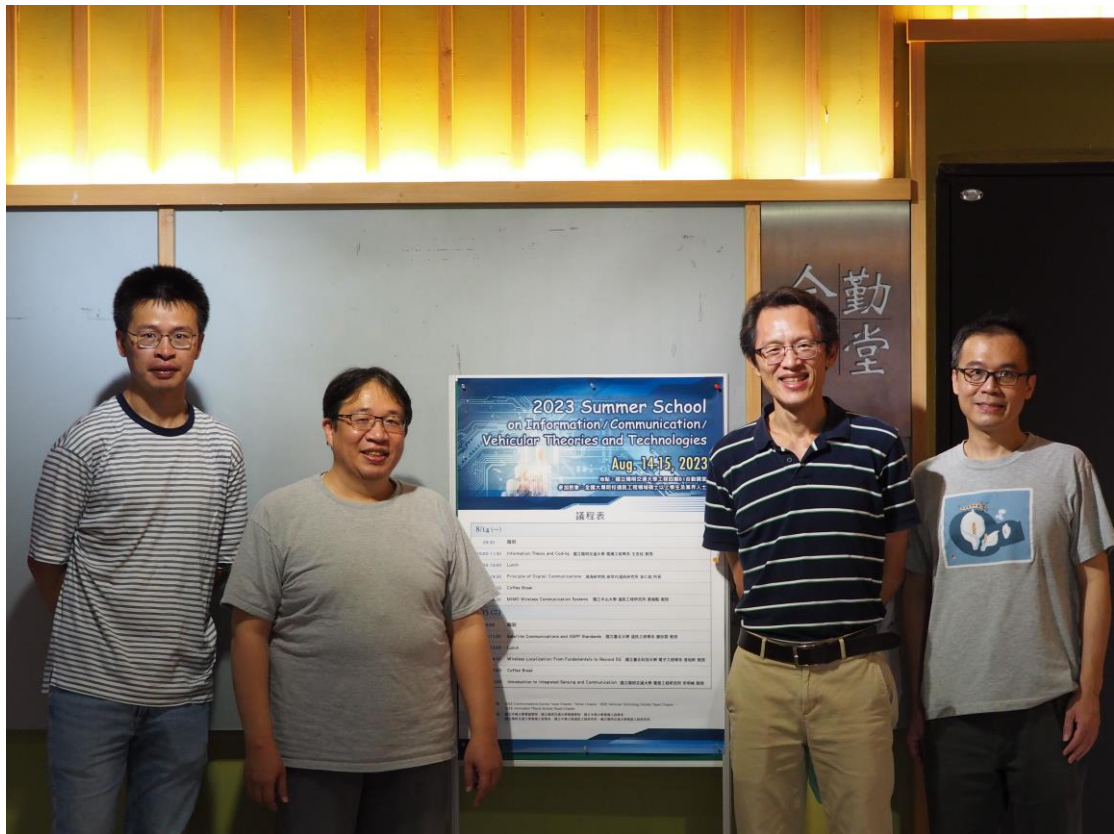
The event was jointly sponsored by the IEEE ITsoc, Comsoc, and VTS, Taipei chapter, and was held at ZyXEL Lecture Hall of Engineering IV Building, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu, Taiwan in August 2021. The summer school offers 6 short courses from Aug. 14, 2023 to Aug. 15, 2023. The topics of the short courses include: "Information Theory and Coding", "Principles of Digital Communications", "MIMO Wireless Communication Systems", "Satellite Communications and 3GPP Standards", "Wireless Localization: From Fundamentals to Beyond 5G", "Introduction to Integrated Sensing and Communication". The website of the summer school is at:

<https://sites.google.com/view/ieeecvstaipeisummerschool/%E6%B4%BB%E5%8B%95%E9%A6%96%E9%A0%8>

1.

Some photos of the activities are attached below.





More than 70 persons registered and attended the summer school. Most of the attendees are graduate students (master students or PhD students) in Taiwan. The graduate students come from more than 10 universities in Taiwan including National Taiwan University, National Tsing Hua University, National Yang Ming Chiao Tung University, and National Cheng Kung University, to name just a few. The six speakers are well-known professors in the field of communications engineering and information theory in Taiwan. They are affiliated with five different universities including National Yang Ming Chiao Tung University, National Tsing Hua University, and National Sun Yat-sen University. The summer school on information/communication/Vehicular theories and technologies is a great event for students and scholars in related field to get together and learn new knowledge.

ii. Technical Talk-Trend of Automobile E/E Architecture &Automotive Ethernet Technology

Time: Feb. 22, 2023; 13:20 p.m.- Feb. 22, 2023: 15:00 p.m. (GMT+8)

Speaker: Albert Kuo, Senior Chief Officer, Realtek Semiconductor Corp., Taiwan,

Place: ED219, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu

Country: Taiwan

Attendance: 83

Event Description:

The event is jointly sponsored by the Institute of Communications Eng. NYCU and IEEE VTS, Taipei Chapter. The talk gives an introduction to the mega trend: CASE (Connected, Autonomous, Shared, Electric) and how it brings revolution to the design of E/E architecture, and the foundation of Software define car (SDC).

iii. Technical Talk- Mobile Cellular Technology Trends from B5G toward 6G- MediaTek's Vision

Time: March 8, 2023; 13:20 p.m.- March 8, 2023: 15:00 p.m. (GMT+8)

Speaker: Dr. I-Kan Fu, Senior Director of Technology, Mediatek, Taiwan, and the chair of TC2, Taiwan  
TAICS

Place: ED219, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu

Country: Taiwan

Attendance: 83

Event Description:

The event is jointly sponsored by the Institute of Communications Eng. NYCU and IEEE VTS, Taipei Chapter. The talk introduces a technology development of B5G and 6G in 3GPP.

iv. IEEE VTS Speech- Classical Universal Application to Deep Regression in Machine Learning

Time: May. 10, 2023; 13:20 p.m.- May 10 2023: 15:00 p.m. (GMT+8)

Speaker: Dr. Chin-Hui Lee, IEEE and ISCA Fellow, and Professor, Georgia Institute of Technology, Georgia, USA.

Place: the ZyXEL Lecture Hall of Engineering IV Building, Kuanfu Campus, NYCU, Taiwan

Country: Taiwan

Attendance: 100+

Event Description:

The event is jointly sponsored by the Institute of Artificial Intelligence Innovation, Institute of Communications Eng. NYCU and IEEE VTS, Taipei Chapter.

v. Technical Talk- Experience on Research Explorations and Project Executions of ICL/ITRI

Time: May. 24, 2023; 15:00 p.m.- May 24 2023: 16:30 p.m. (GMT+8)

Speaker: Dr. Pang-An Ting, Director of Information and Communications Research Lab (ICL), ITRI, Taiwan.

Place: ED219, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu

Country: Taiwan

Attendance: 83

Event Description:

The event is jointly sponsored by the Institute of Communications Eng. NYCU and IEEE VTS, Taipei Chapter.

vi. IEEE VTS Speech- Green Learning for Point Cloud Analysis

Time: July. 21, 2023; 15:00 p.m.- July 21 2023: 16:30 p.m. (GMT+8)

Speaker: Dr. C.-C. Jay Kuo, Academician of Academic Sinica, Taiwan, FIEEE, and William M. Hogue Professor, University of Southern California, USA.

Place: ED116, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu

Country: Taiwan

Attendance: 50

Event Description:

The event is jointly sponsored by the Institute of Electronic Eng. NYCU and IEEE VTS, Taipei Chapter. The talk introduces a low-complexity single-stage representation method for point cloud based on green learning.

vii. IEEE VTS 19th Asia Pacific Wireless Communications Symposium (APWCS) 2023

Time: August 23-25, 2023 (GMT+8)

Place: Tainan Campus, NYCU, Taiwan

viii. Technical Talk- AI-Assisted CAD/EDA: Overview and Outlook

Time: Oct. 31, 2023; 9:00 a.m.- Oct. 31 2023: 10:00 a.m. (GMT+8)

Speaker: Dr. C.-C. Jay Kuo, Academician of Academic Sinica, Taiwan, FIEEE, and William M. Hogue Professor, University of Southern California, USA.

Place: ED116, Kuanfu Campus, National Yang Ming Chiao Tung University, Hsinchu

Country: Taiwan

Attendance: 50

Event Description:

The event is jointly sponsored by the Institute of Electronic Eng, Institute of Communications Eng. NYCU and IEEE VTS, Taipei Chapter. The talk gives an overview on the development of green learning technology, and introduces a promising AI-assisted method for EDA design.

**34. Chapter Name: Signal Processing Society Taipei Chapter (SP01)**

i. APSIPA ASC 2023

Date: 2023/10/31~2023/11/03

Location: No. 1, Section 5, Xinyi Road, Taipei City 11049

Website: <https://www.apsipa2023.org/index.html>

Attendance: 502

Organizer:

- Jing-Ming Guo-, Chair, IEEE Signal Processing Taipei Chapter

Event Description:

APSIPA ([www.apsipa.org](http://www.apsipa.org)) is an association to promote broad spectrum of research and education activities in signal and information processing. With the aim of promoting research and education in signal processing, information technology, and communications, APSIPA holds an annual conference “APSIPA ASC” in different countries since 2009. APSIPA is interested in all aspects of signal and information processing theories, algorithms, securities, implementations, and applications. The 15th annual conference organized by Asia-Pacific Signal and Information Processing Association will be held on October 31-November 3, 2023 in Taipei International Conventional Center, Taipei, Taiwan. All accepted papers will be included in IEEE Xplore and indexed by EI, like all previous years.

The conference has a total of 502 participants, with 133 from domestic locations and 369 from international locations, representing a total of 19 countries. There are 532 submitted papers from 21 countries. There are 395 accepted papers, including 290 oral and 105 poster presentations. All accepted papers are included in IEEE Xplore and indexed by EI, like all previous years.





ii. Winter School

Date: 2023/10/31 9 am-4:40 pm

Attendance: 200

Location: Room 102, Taipei International Convention Center, Taiwan

Organizer:

- Jing-Ming Guo, Chair, IEEE Signal Processing Taipei Chapter

### Event Description:

The Winter School featured distinguished speakers, each contributing valuable insights to the theme.

1. Prof. Chin-Hui Lee from Georgia Institute of Technology presented on "Deep Regression for Spectral Mapping," showcasing applications in speech enhancement, source separation, and speech dereverberation.
2. Prof. Mario Koeppen from Kyushu Institute of Technology delved into "Metaverse as AI Embodiment," exploring techniques, impact, and research opportunities in this emerging field.
3. Editor-in-Chief of the Journal of Imaging Science and Technology, Prof. Chunhui Kuo, discussed "Deep Learning in Image Processing and Computer Vision," providing participants with in-depth knowledge in these domains.
4. Prof. Hung-Yi Lee from National Taiwan University addressed the intriguing question of "How far are we from a speech version of ChatGPT?"
5. Neal Huang from Analog Devices, Inc., Taiwan, enlightened attendees on the "Energy-Efficient Generative AI Future" with a focus on low-power applications of ADI Max78000.



### iii. Women's forum

Date: 2023/11/2 12 pm-1:30 pm

Attendance: 45

Location: Room 101AB, Taipei International Convention Center, Taiwan

Organizers:

- IEEE Signal Processing Taipei Chapter
- National Taiwan University of Science and Technology

Event Description:

It is moderated by Dr. Bonnie N.F. Law, an accomplished expert in signal processing and machine learning, the forum featured a panel of distinguished speakers, including Dr. Chiori Hori, Dr. Cynthia Chen, Simying Ong, and Prof. Pei-Yun Tsai. This initiative showcased the Chapter's commitment to promoting gender diversity by highlighting the accomplishments and insights of leading women in diverse fields such as robotics, transportation science, information security, and electrical engineering. The speakers, each accomplished in their respective domains, provided valuable perspectives, serving as role models for aspiring individuals and contributing to a more inclusive environment.



#### iv. Industrial forum

Date: 2023/11/1 15:00-17:00

Attendance: 50

Location: Room 201A, Taipei International Convention Center, Taiwan

Organizers:

- Jing-Ming Guo, Chair, IEEE Signal Processing Taipei Chapter

Event Description:

The Industrial Forum organized by our Chapter featured two highly successful industry-related activities with prominent speakers, contributing valuable insights to the theme of "AI for Human Well-Being."

1. Stefan Winkler, Research Director of ASUS Intelligent Cloud Services and Adjunct Associate Professor at the National University of Singapore, delivered an impactful presentation on "Machine Learning for Healthcare Applications." His talk focused on recent advances in machine learning, computer vision, and natural language processing, showcasing innovations in medicine. Dr. Winkler highlighted the potential of machine learning to lower healthcare costs, identify effective treatments, and enable disease prevention. The discussion encompassed examples of solutions and emphasized the importance of understanding the healthcare ecosystem and clinical workflows. Attendees gained insights into the challenges and future directions of integrating machine learning into healthcare, making this session a key success in bridging AI with human well-being.

2. Karthi Madhavan, the Country Head of Tata Consultancy Services in Taiwan, delivered a compelling presentation on "AI - Global Trends and Opportunities." He explored how generative AI is transforming interactions in ways that closely resemble human behavior, opening new



possibilities across economic activities. Madhavan emphasized that AI, particularly generative AI, works in synergy with human input, augmenting capabilities and accelerating work processes. His talk delved into the transformative possibilities brought about by generative AI, highlighting its potential impact on economic activities globally. This session provided attendees with a comprehensive overview of AI trends and opportunities, establishing it as another successful industry-related activity within the Industrial Forum.



#### v. AIoT Innovation Challenge

Date: 2023/07/13

Location: Taipei New Horizon 6F

Attendance: 203

Organizer:

- Jing-Ming Guo, Chair, IEEE Signal Processing Taipei Chapter

Event Description:

The AIoT Innovation Challenge in Taiwan marked its seventh edition in 2023, maintaining a strong reputation within the academic and industry sectors. The number of registered participants exceeded 300, showcasing the competition's escalating popularity. Partnering with over 15 industry leaders, including TCES, IET, ADI, ANStek, NXP, WPI, Mouser Elec., ST, and Infineon, the challenge has become a cornerstone for academic-industry collaboration. It continues to prepare students for the evolving tech landscape, encouraging the integration of creativity and practicality in the field of AI and IoT. Notably, there was remarkable growth of over 25% in on-site visitors during the finals, including team mentors and corporate professionals, surpassing the figures from the previous year. This substantial increase underscores the challenge's appeal, establishing itself as a prime platform for interaction between students and industry experts.





vi. Distinguished lecturer- Prof. Woon-Seng Gan

Date: 2023/10/30 10:30am-12pm

Location: National Taiwan University of Science and Technology

Attendance: 52

Organizers:

- IEEE Signal Processing Taipei Chapter
- National Taiwan University of Science and Technology

Event Description:

Biography:

Woon-Seng Gan is a Professor of Audio Engineering and Director of the Smart Nation TRANS (national) Lab in the School of Electrical and Electronic Engineering at Nanyang Technological University, Singapore. He received his BEng (1st Class Hons) and Ph.D. degrees, both in Electrical and Electronic Engineering from the University of Strathclyde, the UK in 1989 and 1993, respectively. He has held several leadership positions at Nanyang Technological University, including serving as the Head of the Information Engineering Division from 2011 to 2014, and as the Director of the Centre for Info-comm Technology from 20016 to 20019. His research has been concerned with the connections between the physical world, signal processing, and sound control, which resulted in the practical demonstration and licensing of spatial audio algorithms, directional sound beams, and active noise control for headphones and open windows. He has published more than 400 international refereed journals and conference papers and has translated his research into 6 granted patents. He is a Fellow of the Audio Engineering Society (AES); a Fellow of the Institute of Engineering and Technology (IET); and selected as the IEEE Signal Processing Society Distinguished Lecturer from 2023-2024. He served as an Associate Editor of the

IEEE/ACM Transaction on Audio, Speech, and Language Processing (TASLP; 2012-15). He is currently serving as a Senior Area Editor of the IEEE Signal Processing Letters (SPL, 2019-); Associate Technical Editor of the Journal of Audio Engineering Society (JAES; 2013-); Senior Editorial member of the Asia Pacific Signal and Information Processing Association Transaction on Signal and Information Processing (ATSIP; 2011-); and Associate Editor of the EURASIP Journal on Audio, Speech, and Music Processing (EJASMP, 2007-). He is also the President-elect (2023-2024) of the Asia Pacific Signal and Information Processing Association (APSIPA)

Title: Harnessing the Power of Deep Learning for Urban Sound Sensing and Noise Mitigation.

Abstract:

In the digital age, the integration of sensing, processing, and sound emission into IoT devices has made their economical deployment in urban environment possible. These intelligent sound sensors, like the Audio Intelligence Monitoring at the Edge (AIME) devices deployed in Singapore, operate 24/7 and adapt to varying environmental conditions. As digital ears complementing the digital eyes of CCTV cameras, these devices provide public agencies with a wealth of aural data, enabling the development of comprehensive and effective sound mitigation policies. In this presentation, we will examine the critical requirements for intelligent sound sensing and explore how deep learning techniques can be utilized to extract meaningful information, such as noise type, dominant noise source direction, sound pressure and frequency of occurrence of the environmental noise. Additionally, we will introduce new deep-learning-based active noise control and mitigation approaches, including reducing noise from entering residential buildings and generating acoustic perfumes to mask annoyance in urban environments; and how these deep learning models can be deployed in an edge-cloud architecture. Our aim is to demonstrate how deep learning models can advance the field of acoustic sensing and noise mitigation and highlight current challenges and trends for future progress.





vii. Distinguished industrial lecturer- Dr. Andreas Stolcke

Date: 2023/12/21 2:20 pm-3:10 pm

Location: National Taiwan University

Attendance: 77

Organizers:

- IEEE Signal Processing Taipei Chapter
- National Taiwan University of Science and Technology
- National Taiwan University

Event Description:

Biography:

Andreas Stolcke obtained his PhD from UC Berkeley, followed by positions as senior research engineer at SRI International, principal researcher at Microsoft, and senior principal scientist at Amazon, as well as an external fellow of the Berkeley International Computer Science Institute. He is currently a Distinguished AI Scientist at Uniphore. His research interests include computational linguistics, language modeling, speech recognition, speaker recognition and diarization, and paralinguistics, with over 300 papers and patents in these areas. His open-source SRI Language Modeling Toolkit was widely used in academia (before becoming obsolete by virtue of deep neural network models). Andreas is a Fellow of the IEEE, the International Speech Communication Association, and the Asia-Pacific Artificial Intelligence Association; he is giving this talk as an IEEE Distinguished Industry Speaker.

Title: Performance Fairness for Speech and Speaker Recognition & Graph Label Propagation for Cross-Utterance Rescoring

Abstract:

The talk will give an overview of recent work on reducing performance disparities between speaker cohorts, for both speaker recognition and speech recognition. Such disparities are typically the result of uneven representation of cohorts in the training data, and I will survey a range of techniques that all aim to counter that unevenness in one way or another. In the second part of the talk I will introduce applications of the graph label propagation algorithm, first in a relatively straightforward manner, to speaker identification using unlabeled training data. Finally,



I will show how graph-LP can be applied to ASR N-best rescoring to incorporate cross-utterance similarity into the decision process. Here the use case for graph-LP is less obvious, but gives very promising results for train/test mismatch conditions, while also reducing accuracy disparities between speaker cohorts.



**35. Chapter Name: Latest Developments of Resonant Power Converters with Wide-Band-Gap Power Devices**

**B.3 Professional and Continuing Education Activities**

Summary of continuing Educational activities including conferences, technical activities, training courses, and distinguished lecture programs with attachment table / information

➤ **Conferences**

Category	Meeting	Date
	19TH TAIWAN MICROMOUSE AND INTELLIGENT ROBOT CONTEST (E25)	2023.08.20
	The 6th IEEE International Future Energy Electronics Conference (IFEEC 2023)_ (IE13)	2023.11.20-23
	The Optics & Photonics Taiwan, International Conference-Annual Meeting of Taiwan Photonics Society, 2023(PHO36)	2023.12.01-03

**B.4 Students Activities**

- Total number of Student branches in the Section: 20
- 1. **Student Branch Name: IEEE Chung Yuan Christian University Student Branch**  
 Student Branch Chair: Hsu-You Kao  
 Student Branch Counselor: Shih-Hsu Huang
- 2. **Student Branch Name: IEEE National Central University Student Branch**  
 Student Branch Chair: Zun-Sheng Wu  
 Student Branch Counselor: Jen-Inn Chyi
- 3. **Student Branch Name: IEEE National Chiao Tung University Student Branch**  
 Student Branch Chair: Hsiang-Lun Shiao  
 Student Branch Counselor: Bo-Cheng Lai

4. **Student Branch Name: IEEE National Chiao Tung University CE Society (CES)**  
Student Branch Chair: Jia-Ching Chou  
Student Branch Counselor: Wai-Chi Fang
5. **Student Branch Name: IEEE National Chiao Tung University ED Society (EDS)**  
Student Branch Chair: Ming-Chun Hong  
Student Branch Counselor: Tuo-Hung Hou
6. **Student Branch Name: IEEE National Chung Hsing University Student Branch**  
Student Branch Chair: Kuo Chia Wei  
Student Branch Counselor: Ching-Chih Tsai
7. **Student Branch Name: IEEE National Chung Hsing University SMC Society (SMCS)**  
Student Branch Chair: Yu-Kai Yang  
Student Branch Counselor: Ching-Chih Tsai
8. **Student Branch Name: IEEE National Kaohsiung University of Science and Technology Student Branch**  
Student Branch Chair: Jin-Ting Yu  
Student Branch Counselor: Chun-Lien Su

9. **Student Branch Name: IEEE National Sun Yat-sen University Student Branch**  
Student Branch Chair: Bin-Han Liu  
Student Branch Counselor: Jen-Hao Teng
10. **Student Branch Name: IEEE National Taipei University of Technology Student Branch**  
Student Branch Chair: Poh-Suan Chang  
Student Branch Counselor: Hai-Han Lu
11. **Student Branch Name: IEEE National Taiwan University Student Branch**  
Student Branch Chair: Rui-Fu Xu  
Student Branch Counselor: Shih-Yuan Chen
12. **Student Branch Name: IEEE National Taiwan University of Science and Technology Student Branch**  
Student Branch Chair: Yun-Chen Chu  
Student Branch Counselor: Shyi-Ming Chen
13. **Student Branch Name: IEEE National Taiwan University of Science and Technology SMC Society (SMCS)**  
Student Branch Chair: Yun-Chen Chu  
Student Branch Counselor: Shyi-Ming Chen
14. **Student Branch Name: IEEE National Taiwan University of Science and Technology IA Society (IAS)**  
Student Branch Counselor: Huang-Jen Chiu
15. **Student Branch Name: IEEE National Tsing Hua University Student Branch**  
Student Branch Chair: Yue Ming Wu  
Student Branch Counselor: Ta-Shun Chu
16. **Student Branch Name: IEEE National Tsing Hua University ED Society (EDS)**  
Student Branch Chair: Wen-Yun He  
Student Branch Counselor: Chih-Fang Huang
17. **Student Branch Name: IEEE National Tsing Hua University IA Society (IAS)**  
Student Branch Chair: Yong-Yao Shen  
Student Branch Counselor: Po-Tai Cheng
18. **Student Branch Name: IEEE National Tsing Hua University PEL Society (PELS)**  
Student Branch Chair: Yu-Chen Su  
Student Branch Counselor: Po-Tai Cheng
19. **Student Branch Name: IEEE Yuan Ze University Student Branch**  
Student Branch Chair: Chien-Min Chen  
Student Branch Counselor: Jeng-Kuang Huang
20. **Student Branch Name: IEEE Yuan Ze University SMC Society (SMCS)**  
Student Branch Chair: Ming-Hung Lin  
Student Branch Counselor: Chih-Min Lin
21. **Student Branch Name: IEEE ED National Taiwan University Student Branch Chapter**  
Student Branch Chair: Yi-Chen Huang  
Student Branch Counselor: Chih-Ting Lin

- Section level student activities (student congress, paper and other contests, awards etc)
  - Rendering Awards for outstanding Student Branch/ Chapter.
- Number of Active Student Branches (Student Branches who have reported required number of meetings during the year): 12
- Summary of Student Branch activities (Student Branch wise with attachment table/information)

**Student Branch Name: IEEE National Taipei University of Technology Student Branch**

Date	2023/03/07 (yyyy/mm/dd)		
Event	A Bidirectional Fiber-FSO-UWOCs Convergence/Discussion Meeting		
Location	Everlight Building, Nation Taipei University of Technology		
Category	Professional	Sub-Category	Professional Development
Attendances	IEEE Members	15	Guests 30

Date	2023/06/06 (yyyy/mm/dd)		
Event	From FSO to Satellite Laser Communications/Discussion Meeting		
Location	Everlight Building, Nation Taipei University of Technology		
Category	Professional	Sub-Category	Professional Development
Attendances	IEEE Members	15	Guests 40

Date	2023/11/07 (yyyy/mm/dd)		
Event	Fiber-FSO-5G NR/6G Convergence/Discussion Meeting		
Location	Everlight Building, Nation Taipei University of Technology		
Category	Professional	Sub-Category	Professional Development
Attendances	IEEE Members	15	Guests 42

**Student Branch Name: IEEE National Taiwan University of Science and Technology Student Branch and Student Branch Name: IEEE National Taiwan University of Science and Technology SMC Society (SMCS)**

Time/Date	Speaker	Topic
2023/10/31	Cheng-Yu Hsieh	Multiattribute decision making method based on nonlinear programming model, cosine similarity measure, and novel score function of interval-valued intuitionistic fuzzy values
2023/11/07	Yu-Jie Chen	A variable weight-based hybrid approach for multi-attribute group decision making under interval-valued intuitionistic fuzzy sets
2023/11/21	Deng-Chuy Chen	Multiple attribute decision making based on novel score function of interval-valued intuitionistic fuzzy values, score matrix, and nonlinear programming model
2023/12/05	Bing-Hao Cheng	Building Trend Fuzzy Granulation-Based LSTM Recurrent Neural Network for Long-Term Time-Series Forecasting

**Student Branch Name: IEEE National Chiao Tung University ED Society (EDS)**

Topic	Femtosecond laser ablation phenomena and its application to microstructure fabrication
Speaker	Prof. Kuniaki Konishi
Time/Date	2023 October 20, 10:00am~11:00am
Attendances	32 guests (Including all student members)

**Summary of Activities:**

In this presentation, Professor Kuniaki Konishi primarily discussed his journey in the development and application of femtosecond laser-related technologies. He mentioned the wide-ranging applications of femtosecond laser, including their use in medicine, biopharmaceuticals, the space industry, and semiconductor material analysis.

A femtosecond laser is an ultrafast laser technology with extremely short pulse durations typically in the femtosecond time scale (1 femtosecond =  $10^{-15}$  seconds). The ultrashort pulse duration gives femtosecond lasers significant advantages in various fields. These lasers produce pulses with extremely short durations, leading to a broad spectrum, often referred to as supercontinuum spectra. This characteristic enables femtosecond lasers to handle extremely high optical intensities and achieve precise temporal resolution. Typically, femtosecond pulses can be generated using optical fibers, optical crystals, or other methods.

Some common applications of femtosecond lasers include:

**Precision Material Processing:** Femtosecond lasers are used for precise cutting, forging, perforating, and micro/nano-structure fabrication. They are especially suitable for fine material processing in areas such as semiconductors, biomaterials, and optical components.

**Multiphoton Microscopy:** Femtosecond lasers are applied in multiphoton microscopy, allowing high-resolution three-dimensional imaging of cells and tissues, widely used in biomedical research.

**Spectroscopy and Spectral Studies:** The broad supercontinuum spectra generated by femtosecond lasers allow for high-resolution spectral analysis, crucial for chemical and physical research.

**Optical Clocks:** Femtosecond lasers are employed to create highly accurate optical clocks, essential for measuring time and frequency.

**Nonlinear Optics:** Femtosecond lasers are invaluable in nonlinear optics experiments, used for generating ultra-broadband frequency pulses, high-order harmonic generation, and more.

**Ultrafast Experiments:** These lasers are used in ultrafast experiments such as ultrafast time-resolved spectroscopy, which investigates rapid processes like molecular dynamics and electron transfer.

During the presentation, Professor Kuniaki Konishi introduced two important technologies and achievements developed by his team, including the fabrication of fine microstructures and their application on 12-inch and 18-inch wafer surfaces for space telescopes. He highlighted the higher aspect ratio and shape definition capabilities of femtosecond lasers compared to traditional nanosecond lasers. Due to their ultrafast speed, deep structures are less likely to be damaged. To improve the resolution of imaging, they customized cameras to achieve a resolution as high as 1.5 micrometers, allowing for more precise definition of beam size and energy distribution. Additionally, they successfully simulated the phenomenon of laser energy gradually weakening in air propagation through optical modeling, which accurately matched experimental data. Finally, he introduced the successful application of femtosecond laser technology for constructing microstructures on 12-inch and 18-inch wafer surfaces, which were used in space telescopes.

Although the topic of this presentation is entirely different from my own research field, it provided me with insights into the world of laser optics. It also helped me understand the challenges and intricacies across various industries and the importance of collaboration in large-scale projects.

**Photo:**





<b>Topic</b>	In search of industry-compatible deposition approaches for highly crystalline TMD materials
<b>Speaker</b>	Dr. Benjamin Groven (imec)
<b>Time/Date</b>	2023 November 8, 10:00am~12:00am
<b>Attendances</b>	42 guests (Including all student members)

**Summary of Activities:**

In this presentation, the speaker shared significant research findings on the deposition of highly crystalline monolayer transition metal dichalcogenides (TMDs) on temperature-sensitive device structures. This topic is crucial within the semiconductor industry, aiming to bring about more innovation and advancement.

Firstly, the speaker discussed two traditional TMD deposition methods: the monolayer stacking method and the wafer bonding method. Both of these methods have their advantages and challenges, and the imec team's research is dedicated to finding the best preparation approach. Understanding how to design precursors to adjust the crystallinity and defectiveness of TMD is crucial, as it ensures that TMD meets the size and specification requirements of the chips.

The importance of compatibility with industrial deposition chemistry was also emphasized by the speaker. Through comparisons and analysis of various studies, they proposed a set of principles for designing a chemical vapor deposition (CVD) process to enable the production of large-area single-crystal TMD monolayers in an industrial setting. In their research, they also discovered challenges, such as the potential oversaturation in the MOCVD process, which could limit the size of TMD crystals.

Using various microscopy and spectroscopy techniques, they compared the nucleation and growth evolution of TMD on different substrates. This helped provide a better understanding of TMD's growth behavior and crystallinity, especially regarding its dependency on the growth surface. These insights contributed to finding a method for designing sapphire template structures to overcome the limitations of MOCVD, resulting in high-quality single-crystal monolayers of MoS<sub>2</sub>.

Additionally, they provided a method for TMD surface smoothing through a process involving etching and deposition. This significantly improved surface roughness, which is crucial for enhancing channel control in MoS<sub>2</sub> transistors. The application of this technology reduced the variability of the threshold voltage and improved the control of subthreshold slope, ultimately enhancing the performance of electronic devices.

Through this presentation, I gained a deep understanding of large-area TMD monolayer preparation methods and related optimizations, as well as the potential impact of these studies on the semiconductor industry. Researchers are continuously making significant progress while facing various challenges. These studies provide a solid technical foundation for the future development of semiconductors and electronic components. I look forward to seeing the widespread application of these research findings and their contribution to innovation and progress in the field of technology.

**Photo:**



**Student Branch Name: IEEE National Tsing Hua University ED Society (EDS)**

<b>Topic</b>	Enabling Topologies and Technologies of WBG Power Conversion
<b>Speaker</b>	Dr. Victor Veliadis,
<b>Time/Date</b>	2023/08/30
<b>Location</b>	National Yang Ming Chiao Tung University

<b>Topic</b>	SiC Power Chip Fabrication in Volume Si Fabs
<b>Speaker</b>	Prof. Tat-Sing Paul Chow,
<b>Time/Date</b>	2023/08/30
<b>Location</b>	National Yang Ming Chiao Tung University

<b>Topic</b>	Smart Power Devices and ICs with Wide and Ultrawide Bandgap Semiconductors
<b>Speaker</b>	Prof. Alberto Castellazzi,
<b>Time/Date</b>	2023/08/30
<b>Location</b>	National Yang Ming Chiao Tung University

**Student Branch Name: IEEE National Tsing Hua University IA Society (IAS)**

<b>Topic</b>	電力系統短路大電流(150 kA*3 秒)案例介紹
<b>Speaker</b>	亞力電機 楊文隆 博士
<b>Time/Date</b>	13:30-15:00, March. 3, 2023
<b>Location</b>	Rm 104, EECS

<b>Topic</b>	Stability and Frequency Control of Smart Grid with Communication Networks in-the-Loop
<b>Speaker</b>	Dr. Lin Jiang, The University of Liverpool
<b>Time/Date</b>	13:30-15:00, March. 10, 2023
<b>Location</b>	Rm 104, EECS

<b>Topic</b>	機器學習簡介
<b>Speaker</b>	台電綜合研究所 高壓研究室 李政崇 博士
<b>Time/Date</b>	13:30-15:00, March. 17, 2023
<b>Location</b>	Rm 104, EECS

Topic	Chroma EV Battery 技術分享會
Speaker	李佳澤 博士 台達電子工業股份有限公司
Time/Date	13:30-15:00, May.12, 2023
Location	Rm 104, EECS

Topic	Real-time Models for Coordination and Diagnostics of Distributed Modular Converter Systems
Speaker	Prof. Herbert L. Ginn, University of South Carolina
Time/Date	13:30-15:00, May.19, 2023
Location	Rm 104, EECS

Topic	電源管理 IC 產業展望
Speaker	立錡科技 BU1 系統開發應用工程處 李嘉榮 處長
Time/Date	13:30-15:00, May.26, 2023
Location	Rm 104, EECS

**Student Branch Name: IEEE National Tsing Hua University PEL Society (PELS)**

Topic	電力相關預測技術
Speaker	國立中正大學 電機工程學系 吳元康 教授
Time/Date	13:30-15:00, March. 24, 2023
Location	Rm 104, EECS

Topic	半導體廠務系統
Speaker	TSMC 張丁興 副理
Time/Date	13:30-15:00, March. 31, 2023
Location	Rm 104, EECS

Topic	自動駕駛與汽車電子運用
Speaker	啓基科技 熊健生 幕僚長
Time/Date	13:30-15:00, April 14, 2023
Location	Rm 104, EECS

Topic	Electric-Vehicle Applications and Speed-Sensorless Control for IPMSM Drive Systems
Speaker	國立台灣科技大學電機工程系 劉添華 教授
Time/Date	13:30-15:00, April 21, 2023
Location	Rm 104, EECS

Topic	從顯示器的電源需求看半導體發展趨勢
Speaker	矽力杰股份有限公司 系統應用工程部經理 粘紘壽 博士
Time/Date	13:30-15:00, April 28, 2023
Location	Rm 104, EECS

Topic	電機技師的職涯
Speaker	新台電機聯合技師事務所 蔡樹仁 博士
Time/Date	13:30-15:00, May.05, 2023
Location	Rm 104, EECS

## **B.5 Affinity Group Activities**

### **B.6 Awards & Recognition Activities**

- Award constituted by the section 2023
  - **Outstanding Chapter Award**
  - **Outstanding Student Branch/Chapter Award**
  - **2023 Best PhD Dissertation Award and 2023 Best Master Thesis Award**
    - : 24 awardee
- Please list all Awards and Recognitions received by the Section, and members in the Section, from R 10 and IEEE HQ during the year 2023
  - 2023 IEEE Membership Outstanding Recruitment and Retention Performance

## B.7 Communication Activities (Newsletter, Home Page, E-mail, etc.)

- Home Page of the section (give the URL and frequency which it is updated)
  1. IEEE Taipei Section: <http://www.ieee.org.tw/>
  2. IEEE CYCU Student Branch:
  3. IEEE NCHU Student Branch: [http://www.ieee.org.tw/chapters/index.php?web\\_class=45](http://www.ieee.org.tw/chapters/index.php?web_class=45)
  4. SMC Society (SMCS) Student Branch Chapter at NCHU:  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=53](http://www.ieee.org.tw/chapters/index.php?web_class=53)
  5. IEEE NCTU Student Branch: [http://www.ieee.org.tw/chapters/index.php?web\\_class=36](http://www.ieee.org.tw/chapters/index.php?web_class=36)
  6. IEEE CTSoc Society (CTSoc) Student Branch Chapter at NCTU:  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=46](http://www.ieee.org.tw/chapters/index.php?web_class=46)
  7. ED Society (EDS) Student Branch Chapter at NCTU:
  8. IEEE NCU Student Branch: <http://ncuieee.blogspot.tw/>
  9. National Kaohsiung Marine University Industry Applications Society:
  10. IEEE NSYSU Student Branch: [http://vlsi.ee.nsysu.edu.tw/html/Student\\_Branch.htm](http://vlsi.ee.nsysu.edu.tw/html/Student_Branch.htm)
  11. IEEE NTHU Student Branch: [http://www.ieee.org.tw/chapters/index.php?web\\_class=44](http://www.ieee.org.tw/chapters/index.php?web_class=44)
  12. ED Society (EDS) Student Branch Chapter at NTHU:
  13. IA Society (IAS) Student Branch Chapter at NTHU:
  14. PEL Society (PELS) Student Branch Chapter at NTHU:  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=51](http://www.ieee.org.tw/chapters/index.php?web_class=51)
  15. IEEE NTU Student Branch: <https://www.facebook.com/ieeentu.taipei/>
  16. IEEE NTUST Student Branch: <http://studentbranch.csie.ntust.edu.tw/>
  17. SMC Society (SMCS) Student Branch Chapter at NTUST:  
<http://studentbranch.csie.ntust.edu.tw/smc/>
  18. IEEE YZU Student Branch: <http://ieeeyzusb.pixnet.net/blog>
  19. SMC Society (SMCS) Student Branch Chapter at YZU:  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=50](http://www.ieee.org.tw/chapters/index.php?web_class=50)
  20. Antennas and Propagation Society (AP03): <https://apstaipeichapter.wixsite.com/apstaipei-chapter>
  21. Broadcast Technology Society (BT02):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=5](http://www.ieee.org.tw/chapters/index.php?web_class=5)
  22. Computer Society (C16): [http://www.ieee.org.tw/chapters/index.php?web\\_class=6](http://www.ieee.org.tw/chapters/index.php?web_class=6)
  23. Circuits and Systems Society (CAS04):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=7](http://www.ieee.org.tw/chapters/index.php?web_class=7)
  24. Consumer Electronics Society (CE08):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=8](http://www.ieee.org.tw/chapters/index.php?web_class=8)
  25. Council on Electronic Design Automation Chapter (CEDA-44):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=34](http://www.ieee.org.tw/chapters/index.php?web_class=34)
  26. Computational Intelligence Society (CIS11):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=9](http://www.ieee.org.tw/chapters/index.php?web_class=9)
  27. Communications Society (COMM19):  
<https://taipei.chapters.comsoc.org>
  28. Components Packaging, and Manufacturing Technology Society (CPMT21):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=12](http://www.ieee.org.tw/chapters/index.php?web_class=12)
  29. IEEE Council on RFID Taipei Chapter (CRFID741): <http://www.ieee.org.tw/chapters/crfid741>
  30. Control Systems Society (CS23): [http://www.ieee.org.tw/chapters/index.php?web\\_class=13](http://www.ieee.org.tw/chapters/index.php?web_class=13)
  31. Education Society (E25): [http://www.ieee.org.tw/chapters/index.php?web\\_class=14](http://www.ieee.org.tw/chapters/index.php?web_class=14)
  32. Electron Devices Society (ED15): [http://www.ieee.org.tw/chapters/index.php?web\\_class=15](http://www.ieee.org.tw/chapters/index.php?web_class=15)
  33. Engineering in Medicine and Biology Society (EMB18):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=16](http://www.ieee.org.tw/chapters/index.php?web_class=16)
  34. Electromagnetic Compatibility Society (EMC27):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=17](http://www.ieee.org.tw/chapters/index.php?web_class=17)
  35. Geoscience and Remote Sensing Society (GRS29):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=18](http://www.ieee.org.tw/chapters/index.php?web_class=18)
  36. Industry Applications Society (IA34):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=292](http://www.ieee.org.tw/chapters/index.php?web_class=292)

37. Industrial Electronics Society (IE13):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=19](http://www.ieee.org.tw/chapters/index.php?web_class=19)
38. Instrumentation and Measurement Society (IM09):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=44](http://www.ieee.org.tw/chapters/index.php?web_class=44)
39. Magnetics Society (MAG33): [http://www.ieee.org.tw/chapters/index.php?web\\_class=23](http://www.ieee.org.tw/chapters/index.php?web_class=23)
40. Microwave Theory and Techniques Society (MTT17):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=24](http://www.ieee.org.tw/chapters/index.php?web_class=24)
41. Oceanic Engineering Society (OE22):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=25](http://www.ieee.org.tw/chapters/index.php?web_class=25)
42. Power and Energy Society (PE31): [http://www.ieee.org.tw/chapters/index.php?web\\_class=26](http://www.ieee.org.tw/chapters/index.php?web_class=26)
43. Power Electronics Society (PEL35): [http://www.ieee.org.tw/chapters/index.php?web\\_class=20](http://www.ieee.org.tw/chapters/index.php?web_class=20)
44. Photonics Society (PHO36):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=22](http://www.ieee.org.tw/chapters/index.php?web_class=22)
45. Product Safety Engineering Society (PSE43):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=27](http://www.ieee.org.tw/chapters/index.php?web_class=27)
46. Reliability Society (R07): [http://www.ieee.org.tw/chapters/index.php?web\\_class=28](http://www.ieee.org.tw/chapters/index.php?web_class=28)
47. Robotics and Automation Society (RA24):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=29](http://www.ieee.org.tw/chapters/index.php?web_class=29)
48. Sensors Council (SEN39):  
[http://www.ieee.org.tw/chapters/News/news\\_more.php?web\\_class=45&id=145](http://www.ieee.org.tw/chapters/News/news_more.php?web_class=45&id=145)
49. Systems, Man, and Cybernetics (SMC28):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=30](http://www.ieee.org.tw/chapters/index.php?web_class=30)
50. Systems, Man, and Cybernetics Society-Taichung Chapter (SMC28-TC):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=41](http://www.ieee.org.tw/chapters/index.php?web_class=41)
51. Signal Processing Society (SP01): [http://www.ieee.org.tw/chapters/index.php?web\\_class=31](http://www.ieee.org.tw/chapters/index.php?web_class=31)
52. Solid-State Circuits Society (SSC37):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=32](http://www.ieee.org.tw/chapters/index.php?web_class=32)  
<https://sscstc.web.nycu.edu.tw/>
53. Vehicular Technology Society (VT06):  
[http://www.ieee.org.tw/chapters/index.php?web\\_class=33](http://www.ieee.org.tw/chapters/index.php?web_class=33)
54. Life Member Affinity Group (LMAG):
55. <http://www.ieee.org.tw/index.php?page=04-list&ChapterID=38>
56. Women In Engineering (WIE): [http://www.ieee.org.tw/chapters/index.php?web\\_class=34](http://www.ieee.org.tw/chapters/index.php?web_class=34)
57. Young Professionals (YP): [http://www.ieee.org.tw/chapters/index.php?web\\_class=299](http://www.ieee.org.tw/chapters/index.php?web_class=299)
58. Microwave Theory and Technique Society (MTT17)  
<http://ieee-eliteschool.org/speech.html#LDORPCWWBGPD>

- Other means of contacts with section members

In order to further improve connections among its members, Taipei Section has formed its Facebook page at <https://www.facebook.com/IEEE.Taipei.Section.fans> in 2011.

## B.8 Industry Relations

- Activities for/with industrial members

### ➤ **Chapter Name: Antennas and Propagation Society Taipei Chapter (AP03)**

Each year, the IEEE AP-S Taipei Chapter (AP03) will involve in inviting the industry to join the local conference “Electromagnetics Workshop--A Bridge to the Future”, and making sure that the industrial members and APS members are actively communicating with and getting to know each other in a yearly basis.

### ➤ **Chapter Name: Circuits and Systems Society Taipei Chapter (CAS04)**

In 2023, Chapter CAS04 has following 3 activities involving industrial members.

CAS-04 Event #1	#Attendees	Date	Venue
CAS Emerging and Selected Topics for Industry Forum (CASIF) IC Design Challenge in AI Era	423 (153 in person, 270 online)	Oct 12, 2023	Taipei International Convention Center (TICC)
<p>Agenda:</p> <p><u>Opening:</u></p> <ul style="list-style-type: none"> <li>● Dr. Bor-Sung Liang, Senior Director, MediaTek / Chair, CASS Taipei Chapter</li> </ul> <p><u>Remarks:</u></p> <ul style="list-style-type: none"> <li>● Dr. Lawrence Loh, President, MediaTek USA / Corporate Senior Vice President, MediaTek</li> <li>● Dr. Chia-Lin Yang, Deputy Executive Secretary, OSTP, National Science and Technology Council</li> <li>● Dr. Chyou-Huey Chiou, Director General, Dept. Industrial Technology, Ministry of Economic Affairs</li> </ul> <p><u>Introduction of IEEE CAS Society</u></p> <ul style="list-style-type: none"> <li>● Dr. Kea-Tiong (Samuel) Tang, Professor, EE, NTHU /Vice President, Regional Activities and Membership, IEEE CASS</li> </ul> <p><u>Keynote</u></p>			

- Title: Challenges in Advanced IC Design Industry: From Technology to Talents
- Dr. Meng-Fan (Marvin) Chang, IEEE Fellow, Director, Corporate Research, TSMC
- Host: Dr. Bor-Sung Liang, Senior Director, MediaTek

#### Technical Talk

- Title: Edge AI Application Evolution – Opportunity and Challenge
- Dr. Allen Lu, Assistant General Manager, Computing and Artificial Intelligence II FU, MediaTek
- Host: Dr. An-Yeu (Andy) Wu, IEEE Fellow, EE, National Taiwan University

#### Panel Discussion

Title : Taiwan's AI Computing Journey: Challenges and Opportunities

Moderator:

- Dr. Shih-Chieh Chang, General Director, Electronic and Optoelectronic System Research Lab, ITRI

Panelists

- Dr. Chen-Yi Lee, Senior VP, National Yang Ming Chiao Tung Univ
- Chairman Frankwell Lin, Chairman, Andes Technology
- Dr. Meng-Fan (Marvin) Chang, Director, TSMC
- Dr. Allen Lu, Senior Director, MediaTek
- Dr. Tuo-Hung (Alex) Hou, Director General, Taiwan Semiconductor Research Institute (TSRI)

Organizer: IEEE CASS Taipei

Co-organizer:

- IEEE Taipei Section
- RISC-V Taipei Alliance
- MediaTek Advanced Research Center
- TSIA ((Taiwan Semiconductor Industry Association)
- IEEE CASS Tainan Chapter
- TIARA (Taiwan IC Industry & Academic Research Alliance)
- TWIoTA (Taiwan IOT Technology and Industry Association)
- AITA (AI on Chip Taiwan Alliance).









CAS-04 Event #2	#Attendees	Date	Venue
CASS DLP (Distinguished Lecturer Program) Talk – Dr. Yen-Kuang Chen	166 (56 in person, 110 online)	Mar 31, 2023	National Yang Ming Chiao Tung University



CAS-04 Event #3	#Attendees	Date	Venue
Speech: Prof. Shimeng Yu	85 (60 in person, 25 online)	Sep 27 2023	National Taiwan University



- **Chapter Name: Council on Electronic Design Automation Chapter (CEDA-44)**
- **Chapter Name: Communications Society Taipei Chapter (COM19)**
- **Chapter Name: Education Society Taipei Chapter (E25)**

This year, the IEEE Education Society Taipei Chapter (E25) worked closely with the Ministry of Education, Taiwan, Program the world association, and the Sha Yang Ye Inc. to hold autonomous



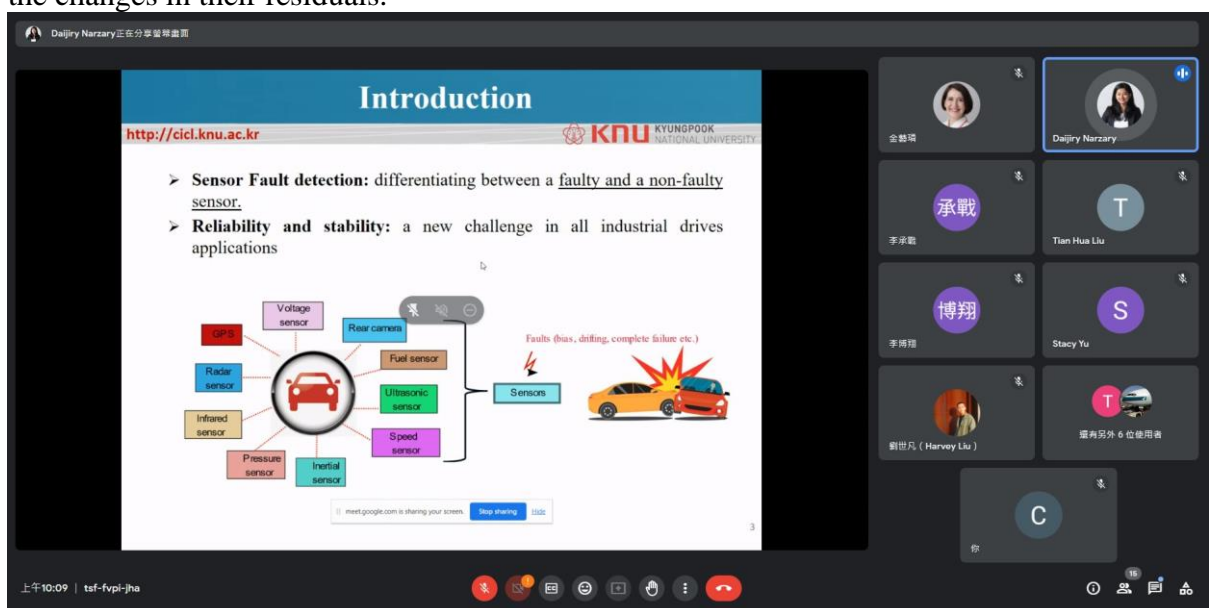
mobile robot contests (TIRT) and related workshops for local elementary, high school and university students. It is hope that the contests will encourage students from elementary and high schools and universities to learn and explore technical and implementation skills in autonomous mobile robots.



➤ **Chapter Name: Industry Applications Society Taipei Chapter (IA34)**

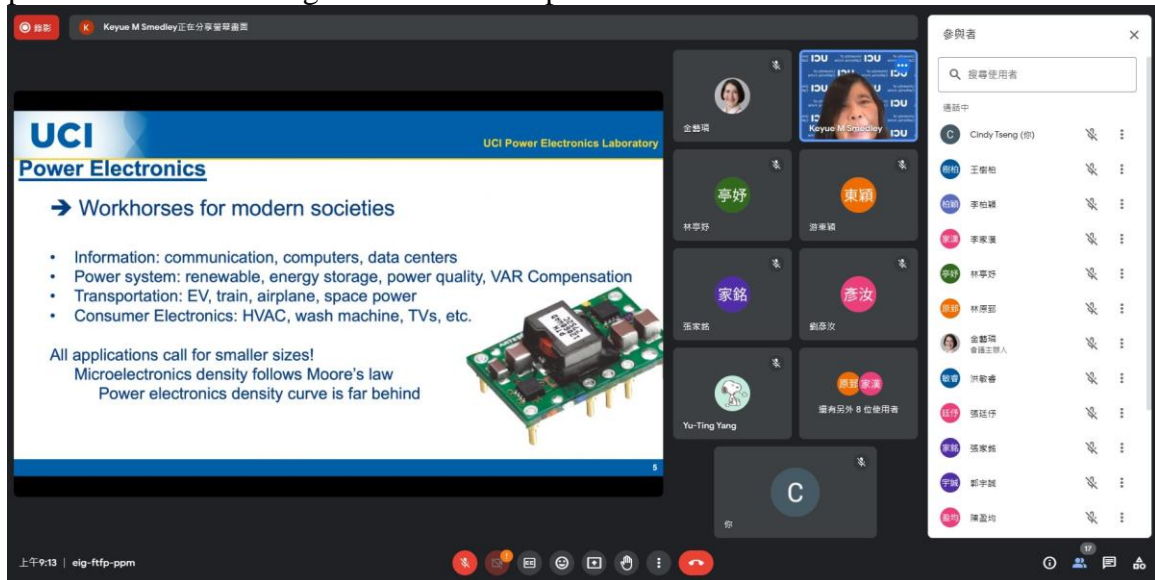
1. PELS-IAS Technical Virtual Talk

On March 14, 2023, at National Taiwan University, Taipei, the IEEE Taipei PELS and IAS Chapters held a joint Power Technical Seminar. The talk on “Multi-Sensor Fault Detections in Industrial Drives” was given by Dr. Daijiry Narzary. Her doctoral work focused on fault diagnosis of sensors utilized in industrial drives, DC microgrids, permanent magnet synchronous motors, and autonomous vehicles. Her research interest includes the broad areas of systems and control theory, fault diagnosis and fault-tolerant control, time-delay systems, and the application of control theory to Autonomous drives. She earlier worked as an Assistant Professor (Contractual) at Bineswar Brahma Engineering College, India. This talk focused on the multiple-sensor fault detection method based on finite time observers for abrupt and intermittent faults is developed. For accurate detection of sensor transient changes, various indices-based residual analysis is employed by using elimination-based techniques. This, in turn, facilitates the accurate differentiation of faulty and non-faulty sensors based on the changes in their residuals.



2. PELS-IAS Distinguished Lecturer Virtual Talk

On March 30, 2023, the IEEE Taipei PELS and IAS Chapters held a joint Distinguished Lecturer Virtual Talk. The talk on “Breaking the Barrier of Bulky Magnetics in Power Conversion: Advances in Resonant Switched-Capacitor Converters” was given by Dr. Keyue Ma Smedley, IEEE PELS Distinguished Lecturer and University of California at Irvine Professor. In this speech, Dr. Smedley also presented general "PWM-like" resonant switched-capacitor converters capable of full voltage regulation within a narrow 2X frequency swing. And how the UCI Power Electronics Laboratory made a breakthrough by realizing full-range voltage regulation of resonant switched-capacitor. Dr. Shenoy was presented with a small gift from IEEE Taipei PELS Section after the talk.



### 3. Joint Technical Physical & Virtual Talk

On September 7, 2023, at National Taipei Tech. University, Taipei, the IEEE Taipei IAS Chapters, NSTC, NTUST, NTUT, NTUT-CPET, and LITEON-NTUT Research Center Joint Technical Physical & Virtual Talk. The talk on “Instant Black Start and Grid Synchronization of Inverter-Based Resources” was given by Dr. Fang Z. Peng, who has been with Florida State University as the inaugural Distinguished Professor of Engineering. He is a Fellow of the IEEE and a Fellow of the National Academy of Inventors. In this presentation, we seek an approach to instantly (1) black start IBRs, (2) pick up local critical loads, (3) synchronize to the grid, and (4) energize transformers with no transients, together which leads to ultrafast recovery of the micro-grid and BPS. Furthermore, we anticipate that the new approach can mitigate transients and instability of the power system as a whole. Dr. Fang Z. Peng was taken to lunch with a number of senior IEEE members after the seminar.



#### 4. Joint Taipei Section Technical Seminar

On November 9, 2023, at National Taiwan University, Taipei, the IEEE Taipei PELS and IAS Chapters held a Joint Taipei Section Technical Seminar. The event with three talks from Prof. Jeehoon Jung from the Ulsan National Institute of Science & Technology, Korea talked about “Advanced Power Electronics Research of UNIST APIPEL: Hybrid Transformer, Bidirectional & Multiport Converters, Talkative DC Grid, Induction Heating, and Power HILS”. Prof. Suyong Chae from the Pohang University of Science and Technology, Korea talked about “Reliability Issues in Power Electronics Converters & Model Predictive Control” and Prof. JongWon Shin from the Chung-Ang University, Korea talked about “Recent development of low-voltage dc-dc converters in Hyundai Motor Company EVs”. Three speakers were taken to dinner with a number of senior IEEE members after the seminar.



#### 5. 2023 Symposium on Semiconductor Power Conversion (S2PC)

The 7th Symposium on Semiconductor Power Conversion (S2PC) will be held on November 10-12, 2023 at National Sun Yat-sen University (NSYSU), Kaohsiung, Taiwan. The main



purpose of this event is to promote the exchange and collaboration between the power conversion communities of Japan, Korea, and Taiwan. The oral and poster sessions of S2PC 2023 will provide great opportunities to increase technical interactions and broaden international experiences for the participants. IEEE IAS also prepared gifts for distinguished guests from Japan and Korea.



➤ **Chapter Name: Information Theory Society (IT12)**

This year, the IEEE Information Theory Society Taipei Chapter (IT12) has one activity related to industrial members. The activity is listed as follows. The 2023 IEEE Taiwan Spring Workshop on Information Theory and Communications, as part of the 2023 Taiwan Telecommunications Annual Symposium, was held at National Central University, Taoyuan, Taiwan, from January 16 to January 17, 2023. It was partially sponsored by the following industry partners but are not limited to: Keysight Technologies, Auden Techno Corp., Anritsu, Haley Technology, and Chunghwa Telecom. Furthermore, it had 5 invited talks from the industry.

➤ **Chapter Name: Photonics Society Taipei Chapter (PHO36)**

- 4/21/2023: Next-Generation Photonic and Microwave Technologies for Quantum Sensing and Digital twins 4/21/2023 Whole day : We organized a workshop on the topic of quantum key distribution, quantum sensing, single photon detectors and digital twins. We invited Ansys to present their new tools for design the quantum photonic components and circuits. And then we invited Prof. GR Lin and Prof. YH Chen to present their work on QKD system and integrated quantum sources for sensing applications. Then we invited Egistec to present their product of SPAD and Prof. JW Hsu for his work in Lidar. In the afternoon, we invited 3 key topics in sub TH Antenna array, CMOS SPAD and VCSELs. Finally, we invited the IEEE fellow Shin-tson Wu to give a talk in AR/VR for digital twins. There were more than 170 participants joined this workshop. About 30 to 40 IEEE members joined this seminar. The engineers from industry is about 50 peoples.
- 8/16/2023-8/18/2023: We organize a student camp for optoelectronic aiming for undergraduate student, and a visit AUO on 8/18/2023. There are about 60 students visited AUO.

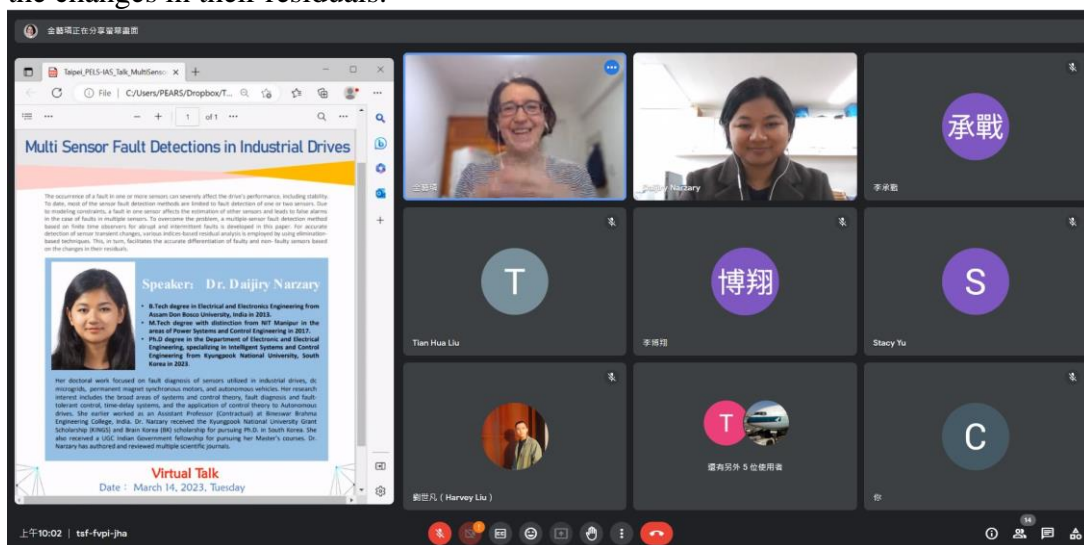
➤ **Chapter Name: Power and Energy Society Taipei Chapter (PE31)**

This year, the IEEE Power and Energy Society Taipei Chapter (E25) work closely with Taiwan Power and Energy Association to related workshops for introducing power markets for various auxiliary services to local engineers and university students.

➤ **Chapter Name: Power Electronics Society Taipei Chapter (PEL35)**

1. PELS-IAS Technical Virtual Talk

On March 14, 2023, at National Taiwan University, Taipei, the IEEE Taipei PELS and IAS Chapters held a joint Power Technical Seminar. The talk on “Multi-Sensor Fault Detections in Industrial Drives” was given by Dr. Daijiry Narzary. Her doctoral work focused on fault diagnosis of sensors utilized in industrial drives, DC microgrids, permanent magnet synchronous motors, and autonomous vehicles. Her research interest includes the broad areas of systems and control theory, fault diagnosis and fault-tolerant control, time-delay systems, and the application of control theory to Autonomous drives. She earlier worked as an Assistant Professor (Contractual) at Bineswar Brahma Engineering College, India. This talk focused on the multiple-sensor fault detection method based on finite time observers for abrupt and intermittent faults is developed. For accurate detection of sensor transient changes, various indices-based residual analysis is employed by using elimination-based techniques. This, in turn, facilitates the accurate differentiation of faulty and non-faulty sensors based on the changes in their residuals.



2. PELS-IAS Distinguished Lecturer Virtual Talk

On March 30, 2023, the IEEE Taipei PELS and IAS Chapters held a joint Distinguished Lecturer Virtual Talk. The talk on “Breaking the Barrier of Bulky Magnetics in Power Conversion: Advances in Resonant Switched-Capacitor Converters” was given by Dr. Keyue Ma Smedley, IEEE PELS Distinguished Lecturer and University of California at Irvine Professor. In this speech, Dr. Smedley also presented general "PWM-like" resonant switched-capacitor converters capable of full voltage regulation within a narrow 2X frequency swing. And how the UCI Power Electronics Laboratory made a breakthrough by



realizing full-range voltage regulation of resonant switched-capacitor. Dr. Shenoy was presented with a small gift from IEEE Taipei PELS Section after the talk.



### 3. PELS International Academic Exchange Dinner

On May 27, 2023, the IEEE Taipei PELS Chapter and the EE Department of National Taiwan University invited Alan Mantooth, the Past President of IEEE PELS and a Distinguished Professor at the University of Arkansas, USA. He is also the Editor-in-Chief of the IEEE Open Journal of Power Electronics and a Fellow of IEEE. Through this opportunity of being invited to Taiwan, professors and scholars from different schools shared their research projects and discussed the possibility of project cooperation in the future. Explored issues and views on the future development of the power electronics industry. It is hoped that through international academic exchanges, they can understand current trends and stimulate more possibilities.



### 4. PELS Distinguished Speaker Talk

On May 30, 2023, at the National Taiwan University, Taipei, the IEEE Taipei PELS Chapters and the Electrical Engineering Department of the National Taiwan University held a Distinguished Speaker Talk. The talk on “The GRAPES Global Institute and The Pursuit of

Carbon Neutrality” was given by Dr. Alan Mantooh, the past president of IEEE PELS and a distinguished professor at the University of Arkansas, USA. He is also the Editor-in-Chief of the IEEE Open Journal of Power Electronics and a Fellow of IEEE. This talk was an opportunity for attendees to hear about what and how some nations transition their energy supplies and usage to net-zero or carbon-free by various dates. Also discussed how GRAPES Global Institute can be an influencer and contributor to solutions within the United States and abroad.



#### 5. Joint Taipei Section Technical Seminar

On November 9, 2023, at National Taiwan University, Taipei, the IEEE Taipei PELS and IAS Chapters held a Joint Taipei Section Technical Seminar. The event with three talks from Prof. Jeehoon Jung from the Ulsan National Institute of Science & Technology, Korea talked about “Advanced Power Electronics Research of UNIST APIPEL: Hybrid Transformer, Bidirectional & Multiport Converters, Talkative DC Grid, Induction Heating, and Power HILS”. Prof. Suyong Chae from the Pohang University of Science and Technology, Korea talked about “Reliability Issues in Power Electronics Converters & Model Predictive Control” and Prof. JongWon Shin from the Chung-Ang University, Korea talked about “Recent development of low-voltage dc-dc converters in Hyundai Motor Company EVs”. Three speakers were taken to dinner with a number of senior IEEE members after the seminar.



#### 6. IEEE PELS-NTU Delta Center Joint Technical Seminar

On November 14, 2023, at the National Taiwan University, Taipei, the IEEE Taipei PELS Chapter and the NTU Delta Center held a Joint Technical Seminar. The talk on “Development opportunities for compound semiconductors in the sustainable net-zero era”



was given by Andy Chuang(莊淵棋), Vice President of Business Development at GaN Systems. This talk was an opportunity for students to hear about Applications and market trends of compound semiconductors (SiC, GaN), the Layout of major international manufacturers in SiC components, and Cross-strait competition and development in SiC and



GaN. The speaker was taken to dinner with a number of senior IEEE members after the seminar.



➤ **Chapter Name: Sensors Council Taipei Chapter (SEN39)**

1. The Service Learning Course at National Yang Ming Chiao Tung University, in collaboration with MediaTek Inc. The end of the semester presentation was held at
2. MediaTek Inc, Hsinchu City, Taiwan on 13<sup>th</sup> of December 2023. The participants includes professors, students, industrial members, & volunteers. Attendees: 35

Presentation	Speaker	Speaker's Title
Can Wireless Charging Live Up to the Hype?	Sanjay Gupta	President, AirtFuel
The Tipping Point of Adoption of Magnetic Resonant Wireless Power Transfer Based on AirFuel™ Standard	Michael de Rooij	Vice President of Applications Engineering, Efficiency Power
Wireless Charging 2.0 - The Benefits of RF Charging	Neeraj Sahejpal	Senior Vice President of Marketing and Business Development, Energous
Design of Wireless Charging for E-Bikes	William Hsu	Director of Application Engineering, Voltraware

3. Healthy Longevity Global Grant Challenge Presentation was held at Taipei Tech Arena, Taipei, 4<sup>th</sup> of August, 2023. The attendees included university professors, industrial members, investors. Estimated attendees: 40

➤ **Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**

**i. 2023 ISSCC Speaker Rehearsal Program**

Title: IEEE SSCS Annual Member Meeting (4 presentations)

Date: Feb. 15, 2023

Place: NYCU, Hsinchu, Taiwan

Attendance: 8

**ii. ISSCC Highlighted Paper Review Forum (11 presentations)**

Date: April 14, 2023

Place: online

Attendance: 150

**iii. 2023 A-SSCC Press Conferences (3 presentations)**

Date: Oct. 27, 2023

Place: NTU Alumni Center, Taipei, Taiwan

Attendance: 35

**iv. 2024 ISSCC Press Conferences (6 presentations)**

Date: Nov. 22, 2023

Place: Sheraton Grand Taipei Hotel, Taipei, Taiwan

Attendance: 35 (including ISSCC FE officers, Taiwan committee members, authors, VIP, press)

**B.9 Humanitarian Technology Activities**

- Humanitarian Technology related activities supported by the Section including collaboration with other OUs.
- SIGHT Activities
- N/A

## **B.10 Community Activities**

- IEEE Social activities (Family day, IEEE day, Engineers Week)

### ➤ **Chapter Name: Power Electronics Society Taipei Chapter (PEL35)**

- **PELS Day Celebration**

Title: PELS Day Celebration (2 presentations)

Date: Jan. 20, 2023

Place: National Taiwan University, Taipei, Taiwan

Attendance: 43

The IEEE Power Electronics Society (PELS) became a full-fledged society within the IEEE on June 20, 1987. The PELS Taipei Chapter held a technical seminar from 13:00-14:30 on June 20 at the National Taiwan University to celebrate PELS Day 2023. The event started with a welcome from the Taipei PELS Chapter Chair, Prof. Katherine A. Kim, National Taiwan University, and was followed by opening remarks and TPEL EIC Update from Prof. Yaow-Ming Chen, the Editor-In-Chief of the IEEE Transactions on Power Electronics and Professor at National Taiwan University.

The event continued with two talks from Prof. Bryan Pong (龐敏熙) from the National Taiwan University of Science and Technology talked about “Design of Power Converters by AI” . Prof. Herbert L. Ginn (金赫伯) from the University of South Carolina, Columbia, SC, USA talked about “Electrical Pollution– When Power Electronics Don’t Play Well with Others”. PELS souvenirs (a combination of bamboo fork and bamboo spoon) were also prepared onsite. Everyone celebrated PELS Day together while enjoying a big cake.



➤ **Chapter Name: Photonics Society Taipei Chapter (PHO36)**

- IEEE Photonics Society Taipei Chapter Annual Meeting
- Time: Dec./12/1/2023
- Place: National Cheng-Kung University, Tainan, Taiwan
  
- Workshop for Next-Generation Photonic and Microwave Technologies for Quantum Sensing and Digital twins:
  - Time: March/21/2023
  - Place: National Taiwan University, Taiwan

➤ **Chapter Name: Sensors Council Taipei Chapter (SEN39)**

- Volunteer Day to Host Elementary School Students for a Day Camp
- Time: 2023/05/06
- Place: National Yang Ming Chiao Tung University, Hsinchu, Taiwan.

➤ **Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**

- SSCS Taipei Chapter Meeting
- Title: IEEE SSCS Annual Member Meeting (2 presentations)
- Date: Aug. 2, 2023
- Place: E-Da Royal Hotel

- Attendance: 35



## **PART C - OTHERS**

### **C.1 Special Events**

- Handles to members and recruits the meeting of proving: Run members to recruit to the academic meeting, research unit, participate. The materials recruiting members and offering the affiliation to handle live are filled in, offer and help outside simply and conveniently, also offer member's consultation service live.

### **C.2 Relationship with National and International Societies and Non-Government Organizations (NGO)**

### **C.3 Collaboration with other IEEE Sections**

- Support extended to neighboring Sections
- Joint activities with any other Section
- N/A

### **C.4 Support extended to Sub-sections & Society Chapters within the Section**

- Support extended for organising technical, educational and professional activities
- Joint activities for membership development
- Support extended for the formation of a Sub-section or transition of a Sub-section into a full Section
- N/A

### **C.5 Best Practices of Your Section (which you would like share with other sections for the benefits of members)**

- Section support can promote joint activities of education and other summer camps. For academic conferences, setting up a booth for membership services and providing membership promotion in academic conferences are good ways to attractive new members. In Taiwan, university professors are allowed to pay membership fees for M.S. and Ph.D. students using their research funding from the Ministry of Science and Technology. This shows positive effects for recruiting student members.

### **C.6 Problems anticipated and suggestions for solutions, if any**

- Because of economic crisis, most industry members have no budget that supported from company to join industry activity. It introduces risk in membership development and billable activity.
- Due to the decline in the number of PhD students, the size of our membership decreases.

## **PART D - GOALS AND PLANS**

### **D.1 Continuation of Project/Activity in Progress and Their Implementation Plans**

#### ➤ **Taipei Section**

##### ▪ **Rendering Awards**

We present best Outstanding Chapter Award and Outstanding Student Branch/Chapter Award for stimulating chapter student members' effort on their annual reports. We group a selection committee to choose the superior from the reports submitted by all the chapters and student branches. The winners can get rewards and be praised on Taipei Section's website.

##### ▪ **Membership Development**

We will plan out Membership Promotion Award for encouraging Chapter which has devoted most effort in increasing their membership.

##### 1. Academic membership development:

- i. Recruit new members in the related fields of researchers and professors through nation-wide conferences or workshop;
- ii. Promote senior members from the qualified IEEE members through the major universities in Taiwan.

##### 2. Industrial membership development:

Recruit new members in the related fields of engineers in industry through nation-wide conferences or workshop.

##### 3. Student membership development:

- i. Recruit new members in the related fields of Ph.D./master students through the IEEE Student Branches in Taiwan.
- ii. Try to enhance the add-on value of IEEE student membership for membership development.

#### ➤ **Chapter Name: Communications Society Taipei Chapter (COM19)**

- Workshops on Information Theory and Communications (a workshop with invited academic and industry speakers) will be held biannually, one in spring and the other in fall.
- National Symposium on Telecommunications (a local symposium accepting paper submissions) will be held every year to benefit both of academic and industrial members.
- Summer school on Information Theory, Communication Theory and Technologies will be held every August to benefit student members, especially the newly admitted master students.
- Graduate Student Seminar on Information Theory and Communications will be held to benefit Ph.D. student members.
- Information Theory Society and Communications Society Taipei/Tainan Chapter Young Research Best Paper Award will be held every one to two years.

#### ➤ **Chapter Name: Components, Packaging and Manufacturing Technology Society Taipei Chapter (CPMT21)**

- EPS Taipei Chapter will co-organize the following conference: International Microsystems, Packaging, Assembly and Circuits Technology Conference (IMPACT) 2024, Taipei Nangang Exhibition Hall, Oct.23 - 25, 2024.
- EPS Taipei Chapter will co-organize several technical meetings.

➤ **Chapter Name: Computational Intelligence Society (CIS11)**

- CIS Taipei Chapter organized special sessions in iFUZZY2023 and ICAST2023.
- The IEEE CIS Taipei Chapter technically organized 2023 Taiwan-Japan Bilateral Smart Medicine Workshop : State-of-the-Art AI Technologies for Biomedical Imaging Detection.
- IEEE CIS Taipei Chapter will invite Prof. Nikhil R Pal, IEEE CIS Distinguished Lecture, to give an invited lecture in 2024.
- CIS Taipei Chapter will keep organizing special sessions in iFUZZY2024 and ICAST2024.
- We will continually promote the faculties and students to join the CIS
- We will continually organize technical talks on AI and industrial topics.

➤ **Chapter Name: Electron Devices Society Taipei Chapter (ED15)**

The ED Taipei chapter is in the promotion of helping the ED student branch chapters to recruit more new student members. Also, several members were promoted to senior members in 2023. Several members have been promoted to the senior member through the assistance of the chapter chair and the other ED Taipei fellows/SM.

- In 2024, the chapter members will continue to assist the NCTU EDS student branch in recruiting new student members.
- Need to work more on the promotion of IEEE senior members as well as few to IEEE Fellow.
- Several DL talks will be arranged for 2024 in-person or virtual format.

The chapter will organize the major event- 2022SNW in Hawaii (with virtual or hybrid) and promote the participation of members/student members for their submission and attendance. A post-IEDM workshop, will be organized in 2024.1.30, and similar event for 2024 post-VLSI might be organized as well, for those who will not be able to participate both meetings. These are also events to promote IEEE EDS activities to a majority of non-members, which is helpful in promoting memberships.

➤ **Chapter Name: Electromagnetic Compatibility Society Taipei Chapter (EMC27)**

Taipei EMC Chapter will continue to progress in

- holding one EMC technical workshop per season,
- preparing and holding the APEMC'25 international symposium in Taipei.

➤ **Chapter Name: Geoscience and Remote Sensing Society Taipei Chapter (GRS29)**

- To joint Taiwan Space Union (TSU) - Seminar Series: (<https://twspaceunion.org/>) in 2023.

- To hold the IGARSS 2023 Involvement: There were more than 25 papers submitted and presented by IEEE GRSS Taipei Chapter members in IGARSS 2023.
- To joint IEEE GRSS ProjNET 2023 with the ChapNet GRSS Malaysia.
- Membership Development: 2023 IEEE GRSS Taipei Chapter Membership includes 2 Life Fellows, 5 Senior Member, 21 Members, 1 Associate Member, 1 Affiliate and 1 Graduate Student Member. We have action plans to promote our Members to Senior Members and Senior Members to Fellows elevations recently.

➤ **Chapter Name: Instrumentation and Measurement Society Taipei Chapter (IM09)**

To carry out these goals, the chapter has set up the following plans for year 2024.

- To hold at least 5 seminars, talks, or short courses.
- To provide technical sponsorship to at least 2 international activities.
- To strengthen cross-chapter activities by joint visits or activities.
- To promote and attract as many local and international attention as possible to participate in 2024 International Instrumentation and Measurement Technology Conference (I<sup>2</sup>MTC) either physically or virtually.

➤ **Chapter Name: Information Theory Society Taipei Chapter (IT12)**

Forthcoming events in 2024 include:

- The 2024 Taiwan Telecommunications Annual Symposium will be held at National Central University, Taoyuan, Taiwan, from January 15 to January 16, 2024.
- The 2024 IEEE Taiwan Fall Workshop on Information Theory and Communications will be held at Tainan in August, 2024.
- Summer School on Information/Communication Theory and Technologies will be held for student members in summer.
- Information Theory Society Taipei Chapter and Communications Society Taipei/Tainan Chapter Young Research Best Paper Award will be held in 2024.

➤ **Chapter Name: Magnetism Society Taipei Chapter (MAG33)**

- Continue to invite 2024 IEEE Distinguished Lecturers for on-site presentations.
- This year (2023) we also supported TAMT and AVS-Taiwan Chapter for several activities such as the Spintronics Symposium at Taiwan Physical Society Annual Meeting. We will continue to work with other local communities for such events.
- Continue to work closely with the EdCom to organize the 2024 IEEE Magnetism Society Summer School in Taipei.

➤ **Chapter Name: Sensors Council Taipei Chapter (SEN39)**

In sensor council, the promotion strategy is to use “real demonstration” to attract students’ interest and company’s interest on sensor IC research topics/applications. Therefore, we actively attend several forums to do the promotion.

- We will sponsor student members for international competitions.
- We will sponsor student members to 2024 IEEE Sensors in Oct 20~Oct 23 in Kobe, Japan.
- Plan to invite researchers to give technical talks for our group members.

➤ **Chapter Name: Systems, Man, and Cybernetics Society Taipei Chapter (SMC28)**

- IEEE SMC Taipei Chapter hosted four invited talks delivered by Prof. Tzyy-Ping Jung, Chair Professor. Sam Kwong, Prof. Nikhil R Pal and Chair Prof. Shun-Feng Su.
- IEEE SMC Taipei Chapter technically co-sponsored two international conferences, 2023 International Conference on Fuzzy Theory and Its Applications (IFUZZY 2023) and 2023 International Automatic Control Conference (CACS 2023), National Penghu University of Science and Technology, Penghu, Taiwan, over Oct. 26-29, 2023. Prof. Li-Wei Ko, Taipei Chapter Chair (SMC 28), served as a Special Session Chair.
- IEEE SMC Taipei Chapter technically sponsored 2023 Taiwan-Japan Bilateral Smart Medicine Workshop : State-of-the-Art AI Technologies for Biomedical Imaging Detection.
- IEEE SMC Taipei Chapter will invite Prof. Nikhil R Pal, IEEE CIS Distinguished Lecture, to give an invited lecture in 2024.
- IEEE SMC Taipei Chapter will help organize 2024 International Conference on System Science and Engineering (ICSSE 2024), National Yang Ming Chiao Tung University, Hsinchu, Taiwan, June 26-28, 2024
- IEEE SMC Taipei Chapter will help organize a workshop for 2024 IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC2024), Borneo Convention Centre Kuching, Sarawak, Malaysia, Oct.7-10, 2024.
- SMC Taipei Chapter will keep organizing special sessions in iFUZZY2024 and CACS2024.
- We will continually promote the faculties and students to join the SMCS
- We will continually organize technical talks on AI and industrial topics.

➤ **Chapter Name: Systems, Man, and Cybernetics Society Taichung Chapter (SMC28-TC)**

- IEEE SMC Taichung Chapter helped organize a special session for 2024 IEEE Int. Conf. on Systems, Man, and Cybernetics (IEEE SMC2024), Borneo Convention Centre Kuching, Sarawak, Malaysia, Oct.7-10, 2024. Prof. Tsai, Taichung Chapter Chair (SMC 28), served as a special session chair, a submission chair and two session chairs in SMC 2024.
- IEEE SMC Taichung Chapter technically sponsored the 2024 international conference on Advanced Robotics and Intelligent Systems (ARIS 2024), National Taiwan University of Science and Technology, Taipei, in August, 2023. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as an international advisory and a session chair.

- IEEE SMC Taichung Chapter technically sponsored the 2024 National conference on Advanced Robotics (Chinese), Taipei Nangang Exhibition Center, in August 2024. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as a national advisory.
- IEEE SMC Taichung Chapter technically sponsored the International Conference on System Science and Engineering 2024(ICSSE2024), National Yang Ming Chiao Tung University, Hsinchu, Taiwan, over June 26-28, 2024. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as the Organized/Invited Session Chair.
- IEEE SMC Taichung Chapter technically sponsored the 2022 National Conference on System Science and Engineering (NSSSE 2024), National Yang Ming Chiao Tung University, Hsinchu, Taiwan, over June 26-28, 2024. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as the Organized/Invited Session Chair.
- IEEE SMC Taichung Chapter technically sponsored the CACS 2024 International Automatic Control (CACS 2024), Taoyuan, Taiwan, over October 31 to November 3, 2024. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as the General Co-Chair and session chairs.
- IEEE SMC Taichung Chapter technically sponsored the 2024 International Conference on Fuzzy Theory and Its Applications Automatic Control (iFuzzy 2024), National Yang Ming Chiao Tung University, Hsinchu, Taiwan, over June 26-28, 2024. Prof. C. C. Tsai, Taichung Chapter Chair (SMC 28), served as an international advisory and session chairs.

➤ **Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**

- Co-sponsor 2023 VLSI/CAD Symposium and Annual SSCS Taiwan member meeting.
- Sponsor student travel fund for 2023 A-SSCC accepted authors if the situation permitted.
- Create Forums/seminars to promote IC design research toward undergraduate students.
- ISSCC training course to help Taiwan speakers to make good presentations at ISSCC.

## D.2 Goals and Future Plans

### ➤ **Chapter Name: Components, Packaging and Manufacturing Technology Society Taipei**

#### **Chapter (CPMT21)**

- EPS Taipei Chapter will continue to collaborate with International Microelectronics Assembly and Electronic Packaging Society (IMAPS), Taiwan Printed Circuit Association (TPCA) and Industrial Technology Research Institute (ITRI) to organize International Microsystems, Packaging, Assembly and Circuits Technology Conference (IMPACT).
- EPS Taipei Chapter will continue to collaborate with Advanced Semiconductor Engineering, Inc. (ASE) to organize IEEE EPS Panel.

### ➤ **Chapter Name: Electron Devices Society Taipei Chapter (ED15)**

The ED Taipei chapter played a major role in promoting EDS activities through post-conference event, the promotion of new and/or student members, and invited technical talks. In the year 2024, several major tasks have been planned as below.

- The chapter chair and other members will be actively participated in various IEEE conferences as organizers or TPC members. For example, several members of the chapter will continue the support in EDS financially supported the 2024SNW in Hawaii, in which several members will participate in as TPC members. Also, key members of the chapter are promoting members to participate in, such as SISC, VLSI, IRPS, IEDM, EDTM etc. as TPC members.
- In the recent 10 years, an international symposium, eMDC, via the help of the chapter has acquired the EDS technical co-sponsorship. Special assistance will be provided in 2022.
- The chapter will regularly invite speakers or DL speakers in stimulating the academic research, encouraging DL from overseas to give in-person/virtual talks. These talks are open to university professors, students and engineers in northern Taiwan.
- Promoting senior members – a target of 5 senior members will be targeted for.

### ➤ **Chapter Name: Electromagnetic Compatibility Society Taipei Chapter (EMC27)**

- The goals of EMC-S Taipei Chapter are to advance the Taiwan EMC industry technology, enrich information exchange in the Taiwan EMC society, and foster the links between the society and the world. For these goals, the Executive Committee was founded and is running well. The Committee members will aggressively participate in accomplishing the activities stated in D.1 to achieve the Chapter goals.

### ➤ **Chapter Name: Geoscience and Remote Sensing Society Taipei Chapter (GRS29)**

- Taipei Chapter of GRS29 hosted 2023 IEEE GRSS Taipei Chapter Best Thesis Award. The goal of 2023 IEEE GRSS Taipei Chapter Best Thesis Award is to increase the number of IEEE GRSS memberships, develop the professional and educational activities, and enhance



the engagement and commitment of the local scientific and commercial communities in Taiwan. The target membership includes all of the regional IEEE members in Taiwan.

➤ **Chapter Name: Instrumentation and Measurement Society Taipei Chapter (IM09)**

I&M Society Taipei Section Chapter has continuously followed the steps and reached the goals that we set up. In 2023, we reinforced the bridging between the academia and the industries, assisting to create more collaborative opportunities between the two. Marching to our 14<sup>th</sup> year of establishment, we are not satisfied with what we have made, but need to be much stronger and have made the following goals and plans,

- To continue adding value to existing members and explore the growth of new members.
- To continuously provide local academia and research circles the access to the world's largest research community, and vice versa help to disseminate the research results to the world.
- To enhance the influence of the chapter in relevant research community.
- To participate in relevant international and domestic activities such as conferences and exhibitions to absorb the latest research development, to build up chapter publicity, and to recruit more members joining the chapter.
- To serve the research communities related to instrument technology by introducing the latest frontier research progress through organizing seminars, talks, and courses.

➤ **Chapter Name: Magnetics Society Taipei Chapter (MAG33)**

- Promotion of interactions between members via regular meetings:
  - Plan to hold more meetings at different locations in Taiwan to promote interactions between members.
- Recruiting more MAG33 members:
  - By promotions in activities like TPS and TAMT annual meetings.
  - Working out an approach to support the registrations of new members.
- Other Workshops are being planned:
  - More likely to hold some MRAM-related workshops.

➤ **Chapter Name: Sensors Council Taipei Chapter (SEN39)**

- The goal of Sensor Council is to strengthen cross-institutional and academic-industry collaboration on sensor-related topics. In the future, we will hold workshops to provide opportunities for scholars, experts, and sponsors who have different expertise on the design of sensors to network and exchange ideas. We hope to make it easier for the people who are in this field to get access to related resources and assistance, so that there can be a larger momentum to pursue high-impact projects.

➤ **Chapter Name: Solid-State Circuits Society Taipei Chapter (SSC37)**

- Membership promotion: Increase the number of members of IEEE SSCS.

- Invited speakers for both DL and non-DL: To increase the visibility of IEEE SSCS in Taiwan academic and industry.
- we plan to have at least 1 training program, 2 workshops, 2 press conferences (ISSCC and A-SSCC), and multiple invited talks (SSCS DL and other invited talks) in 2024. We hope to attract 500 attendees to attend physical SSCS activities and over 500 online participants for the virtual events. We will continue to promote SSCS memberships.

➤ **Chapter Name: Vehicular Technology Society Taipei Chapter (VT06)**

- We plan to work on membership promotion and encourage more potential researchers to be VTS members in 2024 Summer School on Information, Communication, and Vehicular Theories and Technologies.
- We plan to sponsor experts worldwide to give technical talks in Taiwan in order to promote technical interactions between IEEE VTS Taipei members and experts.
- We plan to invite IEEE Distinguished Lecturers/Scholars to Taiwan for research interactions and/or possible research collaborations.

**D.3 Any innovative ideas to make IEEE more creative and value added for sustaining the membership retention and recruitment goals.**

➤ **Taipei Section**

Develop an incentive program for corporations to join IEEE as “Corporate Member” for IEEE Sections Congress.

**D.4. Business Plan for Sustainable Growth and Financial Stability.**

- N/A