

CASIF Taipei 2023

CAS Emerging and Selected Topics for Industry Forum

An event by IEEE CASS Taipei Chapter

IC Design Challenge in AI Era

(English Activity)

● Time: Oct 12, 2023 ● Venue: Taipei International Convention Center (TICC) 台北國際會議中心 R201

9:30 – 9:35	Opening	<ul style="list-style-type: none"> ● Dr. Bor-Sung Liang, Senior Director, MediaTek / Chair of IEEE CASS Taipei Chapter 	梁伯嵩博士 聯發科資深處長 / IEEE CASS Taipei 主席
9:35 – 9:50	Remarks & Group Photo	<ul style="list-style-type: none"> ● Dr. Lawrence Loh, President, MediaTek USA / Corporate Senior Vice President, MediaTek ● Dr. Chia-Lin Yang, Deputy Executive Secretary, OSTP, National Science and Technology Council ● Dr. Chyou-Huey Chiou, Director General, Dept. Industrial Technology, Ministry of Economic Affairs 	貴賓致詞與合影 陸國宏博士 聯發科技 公司資深副總經理 楊佳玲博士 國科會 科技辦公室 副執行秘書 邱求慧博士 經濟部 技術處處長
9:50 – 10:00	Introduction of IEEE CAS Society	<ul style="list-style-type: none"> ● Dr. Kea-Tiong (Samuel) Tang, Professor, EE, NTHU / Vice President, Regional Activities and Membership, IEEE CASS 	鄭桂忠博士 清華大學電機系教授 IEEE CASS RAM 副總
10:00 – 10:30	Keynote Challenges in Advanced IC Design Industry: From Technology to Talents	<ul style="list-style-type: none"> ● Dr. Meng-Fan (Marvin) Chang, IEEE Fellow, Director, Corporate Research, TSMC Host: Dr. Bor-Sung Liang, Senior Director, MediaTek 	張孟凡博士 TSMC 處長, IEEE Fellow 主持人: 梁伯嵩博士, 聯發科技 資深處長
10:30 – 11:00	Technical Talk Edge AI Application Evolution – Opportunity and Challenge	<ul style="list-style-type: none"> ● Dr. Allen Lu, Senior Director, Computing and AI Technology Group, MediaTek Host: Dr. An-Yeu (Andy) Wu, IEEE Fellow, EE, National Taiwan University 	陸忠立博士 聯發科技 資深處長 主持人: 吳安宇博士, 台大電機系教授, IEEE Fellow 聯發科技-臺灣大學創新研究中心 主任
11:00 – 12:00	Panel Discussion Taiwan's AI Computing Journey: Challenges and Opportunities	<p>Moderator</p> <ul style="list-style-type: none"> ● Dr. Shih-Chieh Chang, General Director, Electronic and Optoelectronic System Research Lab, ITRI <p>Panelists</p> <ul style="list-style-type: none"> ● 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) 	主持人: 張世杰博士 工研院 電子與光電系統研究所 所長 與談人: 李鎮宜博士 陽明交通大學 副校長 林志明董事長 晶心科技 董事長 張孟凡博士 TSMC 處長 陸忠立博士 聯發科技 資深處長 侯拓宏博士 國研院 台灣半導體研究中心主任

Organizers :



IEEE CASS Taipei Chapter

Co-organizers :

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



● 網頁與報名系統感謝 TwIoT, 台灣RISC-V聯盟 與台北市電腦商業同業公會 協助

報名網頁二維條碼



Honorable Guests



Lawrence Loh

President

MediaTek USA

Corporate

Senior Vice President

MediaTek



Chia-Lin Yang

Deputy Executive Secretary

Office of Science and
Technology Policy (OSTP),
National Science and
Technology Council
(NSTC)



Chyou-Huey Chiou

Director General

Department of
Industrial Technology (DoIT),
Ministry of Economic Affairs
(MOEA)

Keynote

Challenges in Advanced IC Design Industry: From Technology to Talents

Meng-Fan (Marvin) Chang, IEEE Fellow

¹ Director, Corporate Research of TSMC ² Distinguished Professor, National Tsing Hua University

Abstract:

The increasing demand for advanced IC design necessitates innovation across the entire semiconductor technology stack. Recent breakthroughs in CMOS technology, 3D-IC, and memory-wall issue show great promise. To further propel technological advancement, it is imperative to address the global talent shortage in the semiconductor industry through collaboration between industry and academia to incubate new talent.

Bio:

Dr. Chang is currently a Director of Corporate Research at TSMC and a Distinguished Professor at National Tsing Hua University (NTHU) in Taiwan.

Dr. Chang has worked in industry for more than 14 years and academic for 13 years. He has been serving as Director for the Micro-Electronics Program at the Ministry of Science and Technology (MOST) of Taiwan government.

He was a Distinguished Lecturer for IEEE Solid-State Circuits Society (SSCS) and Circuits and Systems Society (CASS) as well as the Chair of the Nano-Giga technical committee of CASS. He has served as sub-committee chairs of several top semiconductor conferences, such as IEDM, ISSCC and DAC. He currently is an executive committee of IEDM.

His research interests include circuit designs for memory, circuit-device interaction, compute-in-memory for AI chips.

He received recognition as a top-10 contributor of papers to ISSCC (top-1 IC design conference) over the past 70 years in 2023.

Dr. Chang is a Fellow of the IEEE.



Technical Talk



Edge AI Application Evolution – Opportunity and Challenge

Allen Lu

Senior Director, Computing and Artificial Intelligence Technology Group, MediaTek

Abstract:

Over the years, edge AI has made significant strides, transitioning from applications like photo classification and face detection to enhancing video and gaming picture quality. The advent of generative AI has further propelled innovation, revolutionizing our life experiences. However, due to intensive computational and memory requirements, current generative AI applications primarily rely on cloud infrastructure. In this presentation, we aim to explore the emerging trend of shifting from a cloud-centric approach to a collaborative cloud-edge paradigm for generative AI technologies. We will delve into the multitude of opportunities and challenges that lie ahead when supporting generative AI on edge devices. This transformation entails a synergetic blend of technological advancements, enhancements in hardware architecture, and the reduction of computational complexities, ultimately enabling the realization of novel generative AI applications.

Bio:

Dr. Lu is the Senior Director of Computing and Artificial Intelligence Technology Group at MediaTek. He is responsible for the ML/DL algorithm/tool development for mobile phone, camera, tablet, and TV products. Prior to MediaTek, Dr. Lu served as the General Manager of Video IoT (iVoT) Business Unit at Novatek. He was responsible for business and technology planning and execution. Prior to Novatek, Dr. Lu funded Afatek, a fabless company developing RF, digital modulator, and demodulator chips. Afatek was acquired by iTE in 2008.

Dr. Lu worked in Silicon Valley from 1997-2002. He joined the Excess Bandwidth Corp. specializing in signal processing. Excess Bandwidth Corp. was acquired by Virata Corp (now Conexant) in 2000. Dr. Lu was a member of technical staff at Hewlett Packard prior to Excess Bandwidth.

Dr. Lu received his M.S. and Ph.D. in Electrical Engineering from Stanford University.

Panel Discussion

Taiwan's AI Computing Journey: Challenges and Opportunities



Shih-Chieh Chang

General Director
Electronic and
Optoelectronic
System Research Lab,
Industrial Technology
Research Institute
(ITRI)



Chen-Yi Lee

**Senior
Vice President**
National
Yang Ming
Chiao Tung
University



Frankwell Lin

Chairman
Andes
Technology



**Meng-Fan Chang
(Marvin)**

Director
Corporate
Research
TSMC

IEEE Fellow



Allen Lu

Senior Director
Computing and
AI Technology
Group
MediaTek



**Tuo-Hung Hou
(Alex)**

Director General
Taiwan Semiconductor
Research Institute
(TSRI)

Moderator

Panelists

Event Hosts



Kea-Tiong Tang
(Samuel)

Vice President
Regional Activities and Membership
IEEE Circuits and System Society
(CASS)

Professor
National Tsing Hua University



Shih-Chieh Chang

General Director
Electronic and
Optoelectronic
System Research Lab,
Industrial Technology
Research Institute
(ITRI)

Professor
National Tsing Hua University



An-Yeu Wu
(Andy)

Director
MediaTek-NTU Research Center

Distinguished Professor
National Taiwan University

IEEE Fellow



Bor-Sung Liang

Chair
Taipei Chapter
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Senior Director
MediaTek

Visiting Professor
National Taiwan University

IC Tech

in the AI Era



