

CAS Emerging and Selected Topics for Industry Forum An event by IEEE CASS Taipei Chapter

IC Design Challenge in AI Era

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

(English Activity)

9:30 – 9:35	Opening	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	 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	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	 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	 Dr. Allen Lu, Senior Director, Computing and Al 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	 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) 	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: Co-organizers: IEEE Taipei Section ● IEEE CASS Tainan Chapter IEEE CASS Tainan Chapter ● MediaTek Advanced Research Center MediaTek Advanced Research Center Taiwan IcI Industry & Academia Research Alliance (TIARA) Taiwan IcI Industry & Academia Research Alliance (TIARA) EIEE CASS Taipei Chapter Taiwan IcI Technology and Industry Association (TwioTA) Al on Chip Taiwan Alliance Taiwan Ici Technology and Industry Association (TwioTA) Al on Chip Taiwan Alliance (AITA) Maggutataskale intwo for the Chapter			TANAM TANAA TANA



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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)



(English Activity)

Chyou-Huey Chiou

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



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(English Activity)

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.



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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.



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Panel Discussion





Shih-Chieh Chang

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

Moderator



Chen-Yi Lee

Senior Vice President National Yang Ming Chiao Tung University **Chairman** Andes Technology

Frankwell Lin

Taiwan's AI Computing Journey: Challenges and Opportunities

Meng-Fan Chang (Marvin)

> Director Corporate Research TSMC

IEEE Fellow

Panelists

Senior Director Computing and Al Technology Group MediaTek

Allen Lu



Tuo-Hung Hou (Alex)

Director General Taiwan Semiconductor Research Institute (TSRI)

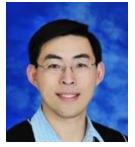


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Event Hosts



Kea-Tiong Tang (Samuel)

Shih-Chieh Chang

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

> **Professor** National Tsing Hua University

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



An-Yeu Wu (Andy)

Director MediaTek-NTU Research Center

Distinguished Professor National Taiwan University

IEEE Fellow

Professor National Tsing Hua University



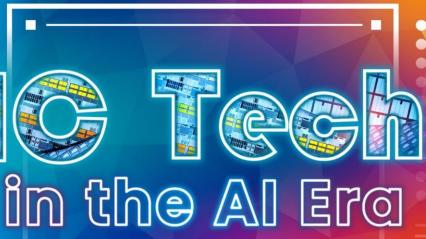
(English Activity)

Bor-Sung Liang

Chair Taipei Chapter IEEE Circuits and System Society (CASS)

> Senior Director MediaTek

Visiting Professor National Taiwan University









 RISC-V



2023. 10. 12 (Thu) AM @ Taipei International Convention Center



IEEE CASS Taipei Chapter

2

2023. 10. 12 (Thu) PM @ Taipei International Convention Center



2023 RISC-V Taipei Day

3

2023. 10. 13 (Fri) AM @ Taipei World Trade Center Exhibition Hall



YST Forum

Youth in Semiconductor Technology Forum



し Taiwan Innotech Expo 台灣創新技術博覽會

2023. 10. 12 (Thu) ~ 10. 14 (Sat)

Taipei World Trade Center Exhibition Hall