Panel

Title: What is a good way to expand a silicon value to a solution value?

Date: Nov. 11 (Tue) 4pm - 6pm (Banquet starts from 7pm)

Abstract:

The market sizes of each IoT application are relatively smaller than the PC and smartphone, although the development and production cost of the LSIs are becoming high. The LSI designers should find the ways to get funding of their development. One way is to get funding from providing system solution or service applications with expanding business models from supplying devices, as well as reducing the LSI costs and making the production volume larger. The pressure to expand the device supplying model depends on each application market, so such status of each application is to be discussed and also whether the expansion of the model is really necessary and practical or not.

Organizer and Co-organizer:

Tzi-Dar Chiueh, Professor, National Taiwan University
Toru Shimizu, Professor, Keio University

Moderator:

Gregory Chen, Research Engineer, Intel Corporation

Panelists / Position:

Chen Yi Lee, Professor, National Chiao Tung University / Medical and Healthcare
Charles Hsu, Chairman, eMemory / Security in IoT
Tihao Chiang, Vice President, Ambarella Taiwan / Video and Surveillance
Zhihua Wang, Professor, Tsinghua University / IoT and Healthcare
Junghwan Choi, Samsung Electronics Co. / PC
Jongwoo Lee, Principal Engineer (IEEE senior member), Samsung Electronics Co. / Mobile
Yasumoto Tomita, Senior Researcher, Fujitsu Laboratories / Interconnect
Takayuki Kawahara, Professor, Tokyo University of Science / Memory System

Organizers

Tzi-Dar Chiueh
Professor, National Taiwan University

Tzi-Dar Chiueh was born in Taipei, Taiwan in 1960. In 1983, he received the B.S.E.E. degree from the National Taiwan University, Taipei, Taiwan. He also received the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology, Pasadena, California, in 1986 and 1989, respectively.

Since 1989, he has been at the Department of Electrical Engineering, National Taiwan University, where he is presently a Distinguished Professor. In 2004-2007, he served as the Director of the Graduate Institute of Electronics Engineering in the same university. He has held visiting positions at ETH Zurich Switzerland in 2000-2001 and at State University of New York at Stony Brook in 2003-2004. His research interests include IC design for digital communication systems and signal processing for bio-medical systems. Between November 2010 and January 2014, he also served as the Director General of the National Chip Implementation Center (www.cic.org.tw) in Hsinchu, Taiwan.

Prof. Chiueh has received the Acer Longtern Award eleven times and the Golden Silicon Award four times. His teaching efforts were recognized eight times by the Teaching Excellence Award from NTU between 2002 and 2012. Prof. Chiueh was the recipient of the Outstanding Research Award from National Science Council, Taiwan in 2004–2007. In 2005, he received the Outstanding Electrical Engineering Professor from the Chinese Institute of Electrical Engineers (Taiwan), and was awarded the Himax Chair Professorship at NTU in 2006. In 2009, he received the Outstanding Industry Contribution Award from the Ministry of Economic Affairs, Taiwan. Prof. Chiueh is an IEEE Fellow.

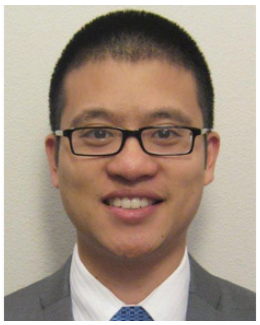
Toru Shimizu
Professor, Keio University

Dr. Shimizu received B.S., M.S., and Ph.D. degrees of Information Science from University of Tokyo, Japan.

Since 1986, he had been involved in microprocessor, microcontroller and SoC design, in Mitsubishi Electric, Renesas Technology, and Renesas Electronics. He was involved in and took leadership of various development projects of LSIs with embedded microprocessor. RISC microprocessors with embedded DRAM, microcontrollers with embedded flash memory, SMP multi-core SOCs for auto and mobile applications are examples of the project results. His research results were presented in ISSCCs and A-SSCCs, and have been applied to commercial semiconductor products. He is honored in 2014 as IEEE Fellow for the development of integrated multi-core microprocessors with large memories. He is now a professor of Keio University.

He has been serving the A-SSCC from the first A-SSCC in 2005 in the technical program committee. He had been in the ISSCC technical program committee from 2003 until 2009. He is also a steering committee member of the Embedded Technology, which is the largest conference and trade show of embedded system industries in Japan.

Moderator



Gregory Chen
Research Engineer, Intel Corporation

Gregory Chen (S'06-M'11) received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Michigan in 2006 and 2009, and 2011.

He is a research engineer in Intel Corporation's Circuit Research Lab, High Performance Circuits group, Hillsboro, OR. His research interests include networks-on-chip and energy-efficient circuits. He has authored over 30 conference and journal papers and 5 patents.

Panelists / Position:

Chen Yi Lee
Professor, National Chiao Tung University / Medical and Healthcare

Chen-Yi Lee is a professor in the Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan, and currently serves as the Deputy Program Director of National Program of Intelligent Electronics. Professor Lee received the B.S. degree from National Chiao Tung University, Hsinchu, Taiwan, in 1982, and the M.S. and Ph.D. degrees from Katholieke University Leuven (KUL), Leuven, Belgium, in 1986 and 1990, respectively, all in Electrical Engineering.

February 1991, he joined the Department of Electronics Engineering and from 2003-2006, he was the chairman. He was the dean of office of research and development in 2007-2010, National Chiao Tung University, Hsinchu, Taiwan. During 2000-2003, he was the director of National CHIP Implementation Center, Taiwan. During 2003-2005, he was the coordinator of Microelectronics Program of Engineering Division, National Science Council, Taiwan.

Dr. Lee is currently serving as IEEE A-SSCC TPC member, IEEE VLSI Symposium JFE Circuits Program Committee member. He was the program committee member of IEEE ISSCC in 2004–2006, DATE TPC member in 2006-2007, and the Past-Chair of Taipei Chapter of IEEE Circuits and Systems (CAS) Society. He received the Award of Outstanding on Technology Licensing in 2007, 2008 from National Science Council, and 2009 from Ministry of Economic Affairs. In 2009, he received the Outstanding Research Award from National Science Council.

Dr. Lee has published more than 250 papers in the areas of SoC for communications and multimedia. He also holds more than 35 US patents in these areas. His current research projects mainly cover the following topics:

- Smart sensing: develop event-driven smart sensors for various IOT and bio-medical applications;
- Unique data transmission: develop feature extraction and body channel communication (BCC) techniques for energy-efficient data transmission, mainly for touch panel and wearable devices;
- Big data analysis: develop HW/SW co-design platform solution to deal with machine-learning (ML) demanded computations and storage management.

Charles Hsu
Chairman, eMemory /
Security in IoT

Dr. Hsu was named Chairman of eMemory in 2009. He founded eMemory Technology Inc. as its President in 2000 with the goal of providing the most innovative NVM IP technology. Under Dr. Hsu's inspiring leadership, eMemory has been achieving technology breakthroughs and awarded prizes one after another, and grow to be the biggest eNVM IP provider in the world. The success and popularity of eMemory quickly grew over the years as industry partners and customers realized the unparallel value of its technology innovation and excellent technical service.

Prior to founding eMemory, Dr. Hsu was appointed the Chairman of Institute of Electronics Engineering of National Tsing-Hua University (NTHU), from 1998 to 2000, because of his outstanding academic and extra-curriculum achievements. He was a professor of Department of Electronics Engineering at NTHU from 1996 to 1998, and in the meantime also the director of Tzu-Chiang Institute and Incubation Center. Before becoming a professor, Dr. Hsu was an associate professor since 1992, a year he was invited by NTHU to return to Taiwan from the United States. Dr. Hsu joined IBM T.J. Watson Research Center in New York State, USA, and served as a researcher from1987 to 1992.

Dr. Hsu graduated from National Tsing-Hua University (NTHU) with a B.S. in Electrical Engineering and received his M.S. and Ph.D. in Electrical Engineering from the University of Illinois, Urbana-Champaign. He holds over 200 patents and published 120 papers in semiconductor device area, and receives renowned recognition for his extensive research and comprehensive inventions.

Tihao Chiang
Vice President,
Ambarella Taiwan /
Video and Surveillance

Tihao Chiang received his Ph.D. degree from Columbia University in 1995. In 1995-1999, he was a program manager at David Sarnoff Research Center (formerly RCA laboratory). In 1999-2004, he was an associate professor at National Chiao-Tung University in Taiwan, R.O.C. He is now with Ambarella Taiwan Ltd. Dr. Chiang is currently a Fellow of IEEE and holder of over 50 US and worldwide patents. He published over 100 technical journal and conference papers in the field of video and signal processing.

Zhihua Wang
Professor, Tsinghua University / IoT and Healthcare

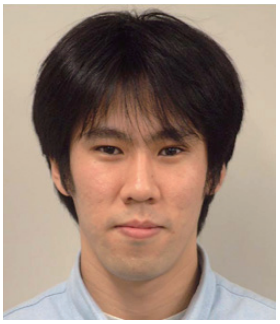
Zhihua Wang (M'99-SM'04) received the B.S., M.S., and Ph.D. degrees in electronic engineering from Tsinghua University, Beijing, China, in 1983, 1985, and 1990, respectively.

In 1983, he joined the faculty at Tsinghua University, where he is a Full Professor since 1997 and Deputy Director of Institute of Microelectronics since 2000. From 1992 to 1993, he was a visiting scholar at Carnegie Mellon University. From 1993 to 1994, he was a Visiting Researcher at KU Leuven, Belgium. His current research mainly focuses on CMOS RF IC and biomedical applications. His ongoing work includes RFID, PLL, low-power wireless transceivers, and smart clinic equipment with combination of leading edge CMOS RFIC and digital imaging processing techniques. He is co-authors of 10 books and book chapters, more than 90 paper in international Journals and over 300 papers in international Conferences. He is holding 58 Chinese patents and 4 US patent.

Prof. Wang has served as Deputy Chairman of Beijing Semiconductor Industries Association and ASIC Society of Chinese Institute of Communication, as well as Deputy Secretary General of Integrated Circuit Society in China Semiconductor Industries Association. He had been one of the chief scientists of the China Ministry of Science and Technology serves on the expert committee of the National High Technology Research and Development Program of China (863 Program) in the area of information science and technologies from 2007 to 2011. He had been an official member of China Committee for the Union Radio-Scientifque Internationale (URSI) during 2000 to 2010. He was the chairman of IEEE Solid-State Circuit Society Beijing Chapter during 1999-2009. He served as a technologies program committee member of the IEEE International Solid-State Circuit Conference (ISSCC) from 2005 to 2011. He has been a steering committee member of the IEEE Asian Solid-State Circuit Conference (A-SSCC) since 2005 and has served as the technical program chair for the 2013 A-SSCC. He served as a Guest Editor for IEEE JOURNAL OF SOLID-STATE CIRCUITS Special Issue in December 2006, December 2009 and November 2014. He is an Associate Editor for IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS and IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS — PART II: EXPRESS BRIEFS.

Jongwoo Lee
Principal Engineer (IEEE senior member), Samsung Electronics Co. / Mobile

Jongwoo Lee (S'03-M'08-SM'14) received BS in EE from Seoul National Univ. in 2001, and MS and PhD in EE from Univ. of Michigan, Ann Arbor, in 2004 and 2008. He was analog designer at BitWave, MA, from 2008 to 2010. He has been working at Samsung Electronics as principal engineer from 2010. His research interests include RF and analog/mixed signal circuits for low power, high speed data converters, multi-mode wireless transceiver and biomedical applications. He is leading data converter design team for mobile products. Dr. Lee is a TPC member in ASSCC data converter sub-committee.



Yasumoto Tomita
Senior Researcher,
Fujitsu Laboratories /
Interconnect

Yasumoto Tomita, is a senior researcher at Fujitsu laboratories LTD. He received his B.S., M.S. and Ph.D degrees in electrical engineering from Keio University, Yokohama, Japan in 2002, 2004 and 2007 respectively. After he joined Fujitsu Laboratories, Ltd., in 2007, he has been engaged in research and design of high-speed I/O with CMOS. Dr. Tomita served as a TPC member for ASSCC and VLSI Symposium on Circuits.

Takayuki Kawahara
Professor, Tokyo
University of Science /
Memory System

Takayuki Kawahara is a Professor in the department of Electrical Engineering at Tokyo University of Science, Katsushika, Japan. He received B.S. and M.S. degrees in physics in 1983 and 1985 respectively, and Ph.D. degree in electronics in 1993 from Kyushu University, Fukuoka, Japan. From 1985 to 2014, he belonged to the Central Research Laboratory, Hitachi Ltd., and served as a Chief Researcher from 2005. In a career spanning of 29 years in the company, he was engaged in the development of low-voltage and low-power circuits (leakage current reduction, charge recycling scheme, and thin-BOX FD-SOI with back-gate bias), memory circuits (DRAM, flash memory, phase change memory, and STT-RAM), and circuitry for DNA sequencer (nano-pore application and ISFET). In 2014, he moved to the faculty position. His current research interests include post-CMOS circuits, biomedical-signal sensing and processing, and spin-current application. He was an Executive Committee Member of ISSCC (2004 - 2010), Far East regional Chair of ISSCC (2008 - 2010), Secretary/Publicity of Symposium on VLSI Circuits (2005 - 2007), Demonstration Chair of BioCAS 2012, and a scientific committee member of International Memory Workshop (IMW, former NVSMW) (2007 - 2013). He was a visiting researcher at Swiss Federal Institute of Technology Lausanne (EPFL) from 1997 to 1998. He is a recipient of The Yamazaki-Teiichi Prize 2009 for “Pioneering development of seminal low-leakage CMOS circuits,” and a recipient of the IEICE Electronics Society Award 2014 for "Pioneering research and development of circuit technology for large-scale spin-transfer torque memory (STT-RAM)." He was an IEEE Distinguished Lecturer (2008 - 2010) and is an IEEE Fellow.