IEEE – IEM eETD Mini Colloquium

ELECTRONIC ENGINEERING TECHNICAL DIVISION

reported by

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IEM eETD and IEEE Penang Joint Chapter (IEEE Penang) organised the IEEE-IEM eETD Mini Colloquium on 24 September, 2016, in EGC foyer, Penang Skills Development Centre (PSDC), Bayan Lepas, Penang.

IEEE Penang is the IEEE chapter in Penang affiliated to these technical societies: Electron Devices (ED), Microwave Theory and Techniques (MTT) and Solid-States Circuits (SSC).

The mini colloquium included talks by distinguished IEEE lecturers Dr Hideto Hidaka and Dr Makoto Ikeda as well as invited speaker Dr Alastair Trigg. It attracted 30 participants comprising mainly IEEE/IEM members and engineers working in electronics companies in Penang.

FIRST SPEAKER

Dr Hideto Hidaka, chief technology officer and senior vice president of Renesas Electronics Corporation, delivered the talk on "Embedded flash memory: Technology, circuits to systems and MCU/SOC applications".

He shared the history of microcontroller (MCU) and its various applications, for instance automotive and cellular phone and explained the importance of embedded flash memory (eFlash) which enabled programmable instruction functions in MCU to support a consistent market growth.

He further elaborated on eFlash technology, architecture, circuits and sub-system design evolution and last, but not least, the application of eFlash in Internet of Thing (IOT). At the end of the talk, he answered questions from the participants who showed a keen interest in understanding the features of eFlash in IOT.

SECOND SPEAKER

After lunch, Dr Makoto Ikeda, professor of electrical engineering and information systems at Tokyo University, delivered a talk on "Smart Image Sensors and applications to 3D range-finding".

First, he introduced the smart image sensor and 3D range-finding techniques and then elaborated on high-speed 3D range-finding techniques based on light-section method lock-in pixel (1D projection), time-encoded pattern projection method (2D projection), lockin-pixel and single-photon avalanche diode (SPAD) techniques based on time of flight (ToF) theory. He talked about application specific integrated circuit (ASIC) of each technique which covered optimised device structure and circuits optimisation to maximise performance.

Top Left : Ir. Bhuvendhraa Rudrusamy presenting a certificate of appreciation to Dr Hideto Hidaka. Top Right: Ir. Bhuvendhraa Rudrusamy presenting a certificate of appreciation to Dr Makoto Ikeda while Dr Wong Peng Wen looks on. Bottom Centre: Ir. Bhuvendhraa Rudrusamy and Dr Alastair Trigg

THIRD SPEAKER

The last talk, "Packaging and Reliability for MEMS", was delivered by Dr Alastair Trigg who explained definition of MEMS (micro-eletromechanical system) and the technology of microscopic devices. MEMS devices have become ubiquitous in almost all aspects of our lives, particularly in the cars we drive and the phones we use.

Dr Trigg emphasised on packaging of MEMS integrated circuit (IC), a key part of the overall design and functionality of the device, so that it will be more robust for delicate moving parts application. He highlighted packaging and reliability challenges, together with examples of solutions which enabled MEMS devices to play such an important role in our lives.

This was the first time that IEEE Penang and eETD had co-organised the technical talk to support the professional development of engineers in the electronic industry. ■