The University of Science and Technology of China
SSCS Student Chapter Holds Microelectronics Seminars

The University of Science and Technology of China recently launched an IEEE Solid-State Circuits Society (SSCS) Student Chapter and the Chapter has been working hard to organize interesting lectures. The Chapter hosted Prof. Jan Van der Spiegel, University of Pennsylvania, who presented “Bio-Inspired Imagers to Brain Machine Interfaces: Synergy Between Engineering and Biology.” Van der Spiegel spoke about the Human Brain Project, a largely sponsored initiative to computationally simulate the human brain. He talked about the remarkable breakthroughs that have been made in understanding brain functions for engineers. Van der Spiegel explained that the sensors required to capture the information from the brain are neural recording systems using the compressed sensing application-specific IC and an external relay. These sensors communicate with neurons to help in recognizing, monitoring, and helping diseases, not limited to vision, hearing, and other illnesses.

Prof. Patrick Yue from the Hong Kong University of Science and Technology discussed the progress in visible light communication (VLC) and its applications in the lecture “Recent Developments in Visible Light Communication: Applications and SoC Design.” Yue talked about wireless communication technology and how it leverages the deployments of light-emitting diode (LED) lighting and offers unique advantages in certain location-based applications, which is also known as LiFi. The IEEE standard for VLC is IEEE802.15.7. The visible light range is between 70 nm (red) and 380 nm (violet). Yue explained that light can be used for transmission or communication where the transmitter and receiver perform the conversion from electrical-to-optical and optical-to-electrical conversions, respectively. The VLC receiver system-on-chip...
employs post-equalization techniques to extend the bandwidth of a common VLC system using ordinary phosphor-based white LEDs from 2–3 MHz to over 20 MHz. Yue also talked about a wide-quarter video graphics array intelligent miniature display with 1.25 Mb/s VLC, enabling LEDs to act as an indoor location-based application like the GPS.

Dong Hun Shin, president, SysonTek, South Korea, gave the lecture “On-Chip Passive Device Modeling for Multimeter-Wave Applications with EMX.” Shin talked about on-chip passive-device modeling for multimeter-wave applications and how it requires a fast, accurate, and easy-to-use methodology. He enlightened students with the development history and training mode of EMX. Due to its advantages, EMX has become the standard for radio frequency and multimeter-wave on-chip passive-device modeling.

The last talk of the day was given by Prof. Lin Fujiang, who shared with students his professional experience in mini-environment standardization for ICs with conceptual guidance on IC designs and future perspectives. He also discussed the problems faced by students in writing research papers for world-class publications and conferences such as IEEE Journal of Solid-State Circuits and the International Solid-State Circuits Conference. At the conclusion of the event, Fujiang expressed his appreciation of the assisting professors and students who attended and wished everyone the best of luck for the future.

—Xu Yan
—Haider Shahzad