

Korea Telecom ETH Zurich Global Lecture Series: 5G—Innovation for Prosperity

The IEEE Solid-State Circuits Society (SSCS) Switzerland Chapter organized a professional event featuring a lecture by Dr. Chang-Gyu Hwang, chief executive officer of Korea Telecom (KT) Corporation, South Korea's largest telecommunications company, at ETH Zurich. Dr. Hwang is known for predicting the use of flash technology. He has made a great contribution to the SSCS through Hwang's law.

He talked about 5G networks. KT became the world's first carrier to commercialize its 5G service, in April 2019. The company anticipates that this new technology and the diversity of 5G use cases will help to surmount today's limitations and enable



Dr. Chang-Gyu Hwang participates during the question-and-answer session.

search and rescue operations, remote control of unmanned aircraft, and similar applications. The talk is available online [1]. After a question-and-answer session, there was a reception and networking event.

—Taekwang Jang, Michel Bron,
and Mathieu Coustans



Lecture attendees visit the SSCS booth at the networking event following the lecture.

Reference

- [1] C.-G. Hwang, "5G – Innovation for prosperity," ETH Zurich, Zürich, Switzerland, Oct. 22, 2019. [Online]. Available: <https://video.ethz.ch/speakers/global-lecture/2019/ce35e35b-bab5-4fe4-a034-92e725419a45.html>

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IEEE CAS-EDS-SSCS Wuhan Joint Chapter Organizes a Technical Talk About Nanometer CMOS ADC Design by Prof. Terry Sim

The IEEE Circuits and Systems Society (CAS), IEEE Electron Devices Society (EDS), and IEEE Solid-State Circuits Society (SSCS) Wuhan Joint Chapter and Huazhong University of Science and Technology (HUST) jointly organized a technical talk, "Design Techniques for Nanometer CMOS Analog-to-Digital Converters," presented by Prof. Terry Sim, University of Macau, China. The lecture was held at the HUST campus on 24 July 2019.

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Prof. Sim started with a review of analog-to-digital converters (ADCs). He emphasized that ADC design can also benefit from CMOS technology scaling to achieve higher signal processing and lower power consumption. However, aggressive technology scaling imposes challenges on ADC design. He explained that many well-established conventional circuit techniques either do not hold for or need to be largely modified to cater to the reduced supply headroom as well as the diminishing intrinsic gain of the transistors in nanometer technology nodes. Prof.

Sim comprehensively presented circuit design techniques for successful implementation of various high-speed/high-resolution ADCs with good power efficiency in state-of-the-art nanometer CMOS technologies.

He used illustrative examples, such as a 65-nm linear-exponential multibit incremental ADC design and 28-nm noise-coupling-assisted continuous-time sturdy multiple-stage noise-shaping (MASH) delta-sigma ADC design. In these two case studies, he explained how novel techniques, including two-stage weighting reshaping, MASH, and adaptive



Prof. Terry Sim talks about nanometer CMOS ADC design techniques.

correction, were implemented as well as how they improved performance. With those advanced topologies and techniques applied, performance has increased significantly,



Prof. Sim interacts with the audience.

and low power consumption has also been achieved.

During the question-and-answer session, Prof. Sim answered many questions about the details of MASH delta-

sigma ADC implementation. Some of the postgraduate students continued one-on-one discussions with him after the talk. The technical talk was very well received by more than 20 attendees, including faculty, researchers, and students from the HUST School of Optical and Electronic Information.

—Chao Wang
Chair, IEEE CAS-EDS-SSCS Wuhan Joint Chapter

—Guoyi Yu
Committee member, IEEE CAS-EDS-SSCS Wuhan Joint Chapter

IEEE SSCS USTC Student Branch Chapter Organizes Research Poster Competition

The IEEE Solid-State Circuits Society (SSCS) University of Science and Technology of China (USTC) Student Branch Chapter organized a research poster competition on 11 January 2020. There were 20 participants, and the competition was judged by the SSCS USTC Student Branch Chapter advisor, Prof. Fujiang Lin. The competition was held at the Micro/Nano Electronic System Integration Center Laboratory, School of Microelectronics, USTC.

The students presented research on low-noise amplifiers, power amplifiers, radio-frequency microelectromechanical resonators, voltage-control oscillators, phase-locked-loop circuits, transimpedance amplifiers, microwave and millimeter-wave antenna design, antenna array calibration, the narrowband Internet of Things, and designing high-current

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SSCS USTC Student Chapter members pose with Prof. Fujiang Lin (center) at the research poster competition.

nonreturn-to-zero and return-to-zero laser diode driver circuits for optical communications. After the exchange of ideas on the latest research, an interactive session was held during which Prof. Lin shared his experiences and guided students in future research directions.

—Muhammad Hunain Memon
and Jiahui Shi
Cochairs, SSCS USTC Student Chapter

—Fujiang Lin and C. Patrick Yue
Advisors, SSCS USTC Student Chapter