

Conference Report: Ten year anniversary of the Swedish System-on-Chip Conference

The 10th Swedish System-on-Chip Conference (SSoCC'10) was arranged on May 3-4 in mid-eastern Sweden, about 40 km from Linköping. This area, together with nearby Stockholm, currently hosts companies like for example Ericsson, SP Devices, Huawei, Catena, Cadence, Acreo, Zarlink, St Jude Medical, and several others. Since its foundation in the 1970's, Linköping University has established itself as an innovative and modern institution in both education and research. It currently hosts several strong research groups focusing on devices, circuits, and telecommunications research. The conference was organized by the Sweden Chapter (SC) of the IEEE Solid-State Circuits Society (SSCS), with local support from the department of Electrical Engineering (ISY) at Linköping University.

Since 2000 SSoCC has provided a forum for inspiration and networking among IC designers, companies, Ph.D students, and senior researchers working in Sweden on different aspects of system-on-chip (SoC) design. Annually, this community comes together to discuss the latest developments and to brainstorm on future directions for research on advanced integrated circuits and systems. SSoCC is alternately arranged close to the main Swedish technical Universities: Royal Institute of Technology (KTH), Chalmers University of Technology (CTH), Lund University (LU) and Linköping University (LiU). In 2006, the SSCS-SC took over the organization and sponsorship arrangements for the conference. The organizing committee has mainly been consisting of the Sweden Chapter board with additional local support from Ted Johansson, Huawei/LiU.



SSoCC'10 Group Photo.

Sweden Chapter Chairman Svante Signell, first from left sitting, Vice Chairman Jerzy Dabrowski, standing behind third from left sitting, local conference support Ted Johansson, fifth from left sitting.

This year's conference theme was "Future Radio Challenges", intended to attract the interest of a broad range of researchers working within areas such as nanometer scale devices, integrated circuits and system level design. Four invited speakers delivered excellent speeches on different topics relating to the conference theme. Prof. Henrik Sjöland, director of the Ultra Portable Devices Research Program at Lund University, gave an overview of the latest developments within switched mode power amplifiers, covering both polar and cartesian architectures using combinations of

different envelope modulation techniques such as PWM, LINC, and power supply modulation. Prof. Jussi Rynänen, Helsinki University, focused on cognitive radios that have the advantage of better usage of the available frequency spectrum. His talk “Cognitive Radio – The Spectrum Sensing Challenge” covered requirements on spectrum sensing and available methods to determine the free resources. It also gave an overview of the sensing radio receiver challenges such as wideband operation and high linearity of the RF part and wide tuning range and fast scanning in the PLL design. It was concluded that there is a great need for more innovation both on system and circuit level in this area.

Fabrication and challenges of new electronic materials was the focus of the talk by Prof. Mikael Syväjärvi, Semiconductor Materials Division at Linköping University, titled “Graphene – A high speed candidate”. Prof. Syväjärvi said the key challenges beyond the silicon era are to identify viable CMOS compatible processes, edge, and interface passivation control, and the formation of structures with geometries suitable for devices. Graphitic materials, such as graphene with an electron mobility about 100 times higher than for silicon, have potential for circumventing many of the integration challenges that face carbon nanotube technology for fabricating high mobility planar devices, although there is still much work needed in this area.

Dr Rolf Sundblad, CEO of Cognicatus AB and AnaCatum Design AB, gave a historical overview of his experience in IC technology and design from 1980 to present in his talk about fabless SoC design startups titled “Developing a Consumer Market Mixed-Signal SoC as a Small Fabless Company”.



Best Student Paper and Presentation Award Winner, Timmy Sundström, receives his prize from the award committee chairman Professor Kjell Jeppson.

In addition to the invited talks the 38 technical papers, presented in parallel sessions, provided an overview of the wide range of System on Chip related research activities going on in Sweden. The

conference sessions covered the latest progress within the analysis, modeling, and design of A/D converters, mixed signal systems, RF circuits and systems, nano technologies, digital filters and system architectures. The Best Student Paper and Presentation Award was awarded to the paper “A Single-Channel, 2.4 GS/s, 4.7 ENOB at Nyquist, Pipeline ADC in 65nm CMOS” written by T. Sundström, C. Svensson, and A. Alvandpour from Linköping University.

SSoCC'10 was organized at Vildmarkshotellet, with a stunning view of the bay Bråviken, where the river Motala Ström meets the Baltic Sea. The modern conference facilities, excellent food and wine, the African Spa & Relax, and the high quality technical presentations made the ten year anniversary a great success. This year's 76 participants (24 IC professionals and 52 Ph.D. students) was a slight increase from last year, continuing the positive trend. Next year the 11th SSoCC will be arranged with local support from Chalmers University, Gothenburg.

For more information, please visit <http://sscs.eit.lth.se/ssocc2010/> for SSoCC and <http://sscs.eit.lth.se/> for activities in the Sweden Chapter.

Martin Anderson
Secretary
IEEE SSCS Sweden

Ted Johansson
Information Officer
IEEE SSCS Sweden

Svante Signell
Chairman
IEEE SSCS Sweden