

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

Area: Integrated Circuits & Embedded Systems

Host: Dr. Karim Ali Ahmed

TOPIC	:	A Hybrid Automated Energy-Efficient Compact SAR ADC Design Using Digital Place and Route Tools
SPEAKER	:	Mr Japesh Vohra Graduate Student, ECE Dept, NUS
DATE	:	Monday, 24 April 2023
TIME	:	2.30PM to 3.00PM
WEBINAR	:	Join Zoom Meeting: https://nus-sg.zoom.us/j/86347198455?pwd=VFVpZ3R6aFpJZjVNMzJxVHIPbXV3UT09 Meeting ID: 863 4719 8455 Passcode: 010697

ABSTRACT

In IoT and edge applications, analog-to-digital converters are required to provide an interface between the system and the physical world. These ubiquitous interfaces typically require a low-power always-on operation for continuous monitoring with varying specifications for different applications. SAR ADCs are a popular choice for low-mid resolution and low-mid sample rate energy-efficient ADCs for edge devices. However, due to the mostly analog nature of SAR ADC, they require a custom design to operate efficiently which increases design time and hence, cost. To reduce these costs while maintaining performance, SAR ADCs require circuit design automation that includes front-end synthesis and back-end generation. A hybrid automated SAR ADC design methodology is introduced which significantly reduces the design time for the SAR ADC while preserving its energy-efficiency. The automated design process includes a fully synthesizable asynchronous edge pursuit comparator, an automated SKILL scripted compact capacitive DAC, a library based bootstrapped switch and an asynchronous digital controller achieving a state-of-the-art energy-efficiency among synthesizable SAR ADCs.

BIOGRAPHY

Japesh is pursuing his PhD degree with the Green IC group at NUS. He received his B.Tech. in Electrical Engineering from Indian Institute of Technology Ropar in the 2018 and worked at Samsung Research and Development Institute for one year as a Software Engineer before joining NUS. His research focuses on designing energy-efficient circuits for real-time systems. He is currently working on designing low-power hybrid SAR ADCs and low-power smart image sensors with in-pixel saliency detection.

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