

## SEMINAR ANNOUNCEMENT

### DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Faculty of Engineering

Website: <https://www.eng.nus.edu.sg/ece/>

**Area: Integrated Circuits & Embedded Systems**

**Host: Prof Massimo Alioto**

#### Research/Technical Seminar

<b>TOPIC</b>	:	<b>Circuits and Systems for Tiny Electronics</b>
<b>SPEAKER</b>	:	<b>Dr David Choo Kyojin University of Michigan</b>
<b>DATE</b>	:	<b>Monday, 27 July 2020</b>
<b>TIME</b>	:	<b>10.00AM to 11.00AM</b>
<b>WEBINAR</b>	:	<b>Join Zoom Meeting</b> <a href="https://nus-sg.zoom.us/j/4156763801?pwd=cUdJUkFBZC85eVI5OEEd5aHhrSDhNUT09">https://nus-sg.zoom.us/j/4156763801?pwd=cUdJUkFBZC85eVI5OEEd5aHhrSDhNUT09</a> <b>Meeting ID: 415 676 3801</b> <b>Password: 335166</b>

#### ABSTRACT

Electronics have been becoming smaller and smaller, continuing to reach deeper into our lives and enhance our capabilities. IoT devices are part of this trend and are projected to reach more than 10 billion devices, interacting with us more than 4,500 times per day in the next decade. One of the smallest and most pervasive forms of IoT is represented by wearables, where electronics become everyday accessories (e.g. watch, glasses). Yet, even smaller electronics in mm-scale is on the horizon, the "Tiny Electronics".

In this talk, various approaches to enable "Tiny Electronics" are discussed, introducing circuits that are more energy efficient, denser, and smaller. Charge-domain circuits are introduced as one of the key design approaches that can vastly improve the performance of integrated systems – in association with energy-efficient analog front-end, ADCs, and other essential building blocks. Low-power image sensor systems that leverage on-chip intelligence to improve energy efficiency are also introduced. Current bottlenecks and future directions of tiny electronics will also be discussed at the end of the talk.

#### BIOGRAPHY

Kyojin David Choo is a Research Fellow at University of Michigan, where he also had done his Ph.D in 2018. Before his Ph.D., he was with Samsung Electronics of South Korea, where he designed mobile/DSLR target image sensors, including award-winning sensor for Samsung NX1. He is a mixed-signal circuit and systems designer and his work focuses on building dense and energy efficient circuit solutions to enable Tiny Electronics. His research interests include sensor interfaces, energy converters, high-speed links/timing generators, and millimeter-scale integrated systems. Much of his recent researches are motivated by unique properties of charge-domain circuits and their interesting implications in various applications.

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