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강연제목: CMOS Digital Radiography

Abstract:

X-rays, high-energy electromagnetic radiation, are often used in medical diagnostics. Medical X-ray detectors such as computed tomography, radiography, and dental X-ray are widely used in our daily lives. Therefore, the market size of the X-ray detector has increased in recent years, and its forecast is also very prospective. The wafer-scale CMOS detector can be realized by using wafer stitching technique. Due to the volume-scale feasibility of the scintillator with CMOS pixels, CMOS X-ray detectors are not only cost-effective but also ready to use for large detectors, and thus, dominate the X-ray imaging market. CMOS X-ray detectors used in industrial and medical devices should provide full image depth even for a specific region of interest and require high resolution, low noise, and wide dynamic range in a wafer-scale detector. Therefore, the CMOS X-ray detector poses significant challenges to the sensor and readout interfaces. It would be interesting to see how such challenges are adequately addressed in recent advances in CMOS X-ray detectors.

Brief Biosketch

Youngcheol Chae (채영철) is currently a Professor in Electrical and Electronic Engineering at Yonsei University, Seoul, Korea. After joining Yonsei University in 2012, he leads a Yonsei Mixed-Signal IC group, focusing on innovative analog and mixed-signal circuits and systems for communication, sensing, and biomedical applications. This has resulted in 130+ peer-reviewed journal and conference papers and holds 70+ patents. Especially, his research team reported 20 State-of-The-Art Chips at International Solid-State Circuits Conference (ISSCC). Dr. Chae has been serving as a TPC member of the International Solid-State Circuits Conference (ISSCC), Asian Solid-State Circuits Conference (A-SSCC), and Custom Integrated Circuits Conference (CICC). He received the ISSCC 2021 Takuo Sugano Award for Outstanding Far-East Paper, the Best Young Professor Award in Engineering from Yonsei University in 2018, the Haedong Young Engineer Award from the Institute of Electronics and Information Engineers (IEIE) Korea in 2017, the ISSCC Silkroad Award in 2017, the Outstanding Research Award of Yonsei University (2017, 2019, and 2020), and the Outstanding Teaching Awards of Yonsei University (2013, 2014).