Title of the tutorial: Evolution of low power analog/RF designs in the last decade: past, present and future trends

Abstract: Over the last 20 years, low power analog/RF designs have been popular in industrial products and research. This tutorial will describe fundamental circuits and systems techniques that lead to the designs of ultra-low power systems and their evolution over time. This talk will cover examples from wideband and narrowband scalable RF systems including wideband, BLE, and quantum computing systems using CMOS technology nodes between 90nm to 14nm using digital and analog techniques.

Duration: 1.5 hrs

Instructor: Sudipto Chakraborty

Short bio: Sudipto Chakraborty received his B. Tech from Indian Institute of Technology, Kharagpur in 1998 and Ph.D in EE from Georgia Institute of Technology in 2002. He worked as a researcher in Georgia Electronic Design Center (GEDC) till 2004. Since 2004 to 2016, he was a senior member of technical staff at Texas Instruments where he contributed to low power integrated circuit design in more than 10 product families in the areas of automotive, wireless, medical and microcontrollers. Since 2017, he has been working at the IBM T. J. Watson Research Center where he leads the low power circuit design for next generation quantum computing applications using nano CMOS technology nodes. He has authored or co-authored more than 75 papers, two books and holds 87 US patents. He has served in the technical program committees of various conferences including CICC, RFIC, IMS and has been elected as an IBM master inventor in 2022 for his contributions.

Expected impact: Supposed to cover details that will be interesting for beginners to experienced engineers.

Materials: Preliminary slides available, can be sent for review upon request.