

erBio: Ultra Low-Power Electronics for Biomedical Devices

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Providing prevention-oriented and personalized healthcare services has become a necessity to keep people away from diseases and to reduce the healthcare costs. To implement such kind of healthcare systems, portable or wearable monitoring and diagnostic biomedical devices need to be developed. The development of these devices is a very challenging task due to their stringent requirements for ultra low-power and packaging in a small form-factor.

The main goal of this project is to advance the state-of-the-art in the field of ultra low power biomedical devices by exploring novel design techniques at both the system and circuit levels ranging from energy-efficient signal processing architecture to very low-voltage ($\sim 0.5\text{V}$) ultra low-power ($\sim \mu\text{W}$) CMOS analog and mixed-signal circuits. The focus of this project is the bio-signal acquisition, which includes the analog front-end and the Analog-to-Digital Converter (ADC) of a biosensor.