

Title: Overview of design challenges in high-performance ExG Interfaces

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Abstract: Over last few decades, significant progress has been made in the integration of biomedical readouts circuits in CMOS technology for monitoring of biological signals such as electrocardiogram (ECG), electroencephalogram (EEG) and electromyogram (EMG). Continuous and long-term monitoring of biomedical data can improve the quality of life along with an associated reduction in the healthcare costs enabled by timely diagnostics. This progress is evident from the growth of peer reviewed publications on the biomedical signal processing and related topics. An example search was conducted on IEEE Xplore website to find the number of publications with author keywords containing the terms (biomedical, ExG, ECG, EEG or EMG) over consecutive 2-year periods starting from 2002 to 2020. A graphical summary of the obtained search result is illustrated in the Figure 1 below.

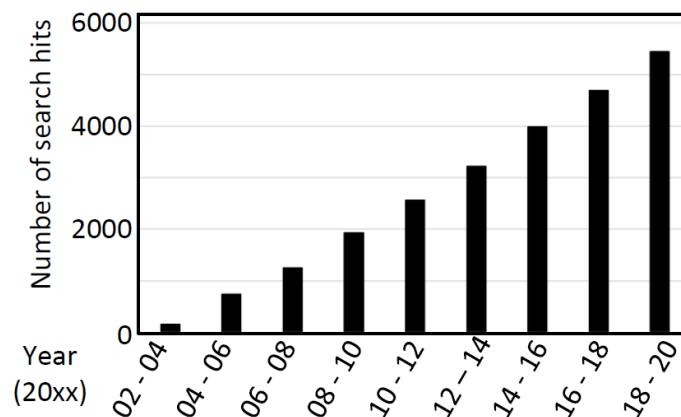


Figure 1: Number of publications with author keywords containing terms (biomedical, ExG, ECG, EEG or EMG) on IEEE explore website over consecutive 2-year periods from 2002 to 2020.

In-spite of the significant developments biomedical systems, design of an ExG readout system still faces a host of conflicting challenges both at system and circuit level. These challenges and their state-of-the-art solutions are discussed in detail in the paper.

Author / Presenter BIO:

- Komail Badami has been with CSEM since May 2018 where he enjoys working on research and development of exciting biomedical systems.
- Prior to joining CSEM, he was with MICAS research labs at KU Leuven working on a PhD degree supervised by Prof. Marian Verhelst in the field of context and application aware design of analog systems for use in sensor interfaces.