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(57) Abstract :
 METHOD AND SYSTEM FOR PROVIDING LOW-NOISE ANALOG FRONT-END ARCHITECTURE FOR BIOMEDICAL SIGNAL ACQUISITION ABSTRACT The present invention relates to a method and system for acquiring biomedical signals with enhanced accuracy and reduced noise interference. The disclosed system includes a sensor for capturing biomedical signals, a low-noise amplifier utilizing a differential amplifier configuration to amplify the signals while minimizing common-mode noise, and a bandpass filter to selectively pass a predetermined range of frequencies associated with the biomedical signals. The filtered signals are digitized using an analog-to-digital converter and transmitted to a processor for further analysis. The invention also encompasses a control mechanism that dynamically adjusts the gain parameters of the low-noise amplifier based on the characteristics of the biomedical signals, optimizing the signal-to-noise ratio. This novel analog front-end architecture ensures improved precision in biomedical signal acquisition, making it particularly well-suited for applications in medical diagnostics, monitoring, and research.

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