Abstract

Filtering of ECG signal is very important because noisy ECG signal can mask some important features of the Electrocardiogram (ECG). Hence the filters are necessary to remove this noise for proper analysis of the ECG signal. This paper presents the study of FIR filter using common subexpression elimination techniques for ECG signal Processing. The common subexpression elimination techniques minimize the logic operators (LO) in realizing finite impulse response.
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(FIR) filters. The Canonical Signed Digit (CSD) representation of filter coefficients will increase the common subexpressions which reduces the design complexity. The design examples show that the average reduction of LO achieved using the optimized method is better than the other subexpression techniques. All the techniques are designed and simulated using MATLAB and Modelsim.

References

- Y. Takahashi, M. Yokoyama, "New cost-effective VLSI implementation of
Filtering Noise from Electrocardiogram using FIR filter with CSD coefficients


Index Terms

Computer Science

Signal Processing

Keywords

Electrocardiogram  Fir Filter  Canonical Signed Digit  Subexpression Elimination  Logical Operator.