An extensive Markov system for ECG exact Coding

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Abstract - In this paper an extensive Markov process, which considers both the coding redundancy and the intersample redundancy, is presented to measure the entropy value of an ECG signal more accurately. It utilizes the intersample correlations by predicting the incoming n samples based on the previous m samples which constitute an extensive Markov process state. Theories of the extensive Markov process and conventional n repeated applications of m-th order Markov process are studied first in this paper. After that, they are realized for ECG exact coding. Results show that a better performance can be achieved by our system. The average code length for the extensive Markov system on the second difference signals was 2.512 bits/sample, while the average Huffman code length for the second difference signal was 3.326 bits/sample.

Keywords – ECG data compression, extensive Markov process, exact coding.

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