Meeting abstract
UDC: 616.12-073.97:616.12-001.35



# Electrocardiogram (ECG) Signal Compression Techniques

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**BACKGROUND:** *Although digital storage media is not expensive and computational power has exponentially increased in last years, the possibility of electrocardiogram (ECG) compression still attracts the attention, due to the huge amount of data that has to be stored/transmitted, the amount that grows (depending upon the sampling rate, quantization levels and number of sensors) at the rate of 7.5-540 kB per minute per patient, depending upon the time and amplitude sampling rate and number of sensors. Besides the increased storage capacity for archival purposes, ECG compression allows real-time transmission over telephone networks, economic off-line transmission to remote interpretation sites, improves Holter monitor systems and enables efficient ECG rhythm analysis algorithms.*

**THEORY AND TELEPATHOLOGY STATUS:** *ECG compression methods attempt to reduce the dimensionality of the nonstationar and quasiperiodical ECG signal, while retaining all clinically significant features including P-wave, QRS complex and the T-wave. Various compression techniques have already been developed. The lossless ones (null suppression, run-length coding, diatomic coding, pattern substition, differencing, fascimile, statistical - Huffmann, LZ family) are less suitable as the reconstruction is perfect while compression ratio is poor. ECG signal allows distortion so the lossy methods are better (polynomial predictors and interpolators, orthogonal transforms, Fan, AZTEC, CORTES, TP, DPCM, ADPCM, broad family of subband and wavelet coding, probabilistic neural networks and addaptive Fourier coefficient techniques. There are also trials to combine the lossy and lossless techniques (ALZ77). Some of them are heuristic ones (straightforward application of an existing method), but most of them are designed specifically for ECG signal.*

**PRELIMINARY RESULTS:** *Methods comparision is based upon the compression ratio CR (a ratio of the size of the compressed data to the original data) and measure of error loss PRD (percent mean-square difference normalized by the original data) and execution time.*

**CONCLUSION:** *Different compression methods yield different results, regarding the compression ratio (2-30) and PRD (0-30%). The available softwares, including the original method, was tested using both the signals from Medical Faculty in Belgrade and The MIT-BIH ECG Compression Test Database.*

**KEY WORDS:** *Data compression, ECG*

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Accepted for publication: 20. 04. 2001.