Abstract
Paper presents a comparative evaluation of features extraction algorithm for a real-time isolated word recognition system based on single FPGA and ARM chip. The Mel-frequency cepstral, linear frequency cepstral, linear predictive and their cepstral coefficients were implemented in hardware/software design. The proposed system was investigated in speaker dependent mode for 100 different Lithuanian words. The robustness of features extraction algorithms was tested recognizing the speech records at different signal to noise rates. The experiments on clean records show highest accuracy for Mel-frequency cepstral and linear frequency cepstral coefficients. For records with 15 dB signal to noise rate the linear predictive cepstral coefficients gives best result. For the classification purpose the pipelined dynamic time warping core was implemented. The initial training of the recognizer is fully controlled by voice. The vocabulary updating process is automated. The proposed word recognition system satisfies the real-time requirements and is suitable for applications in embedded systems.