Microcontrollerbased system for voice disorders detection

Abstrak

The research was concerned with creating a device for vocal signal monitoring based on microcontroller application. The device was implemented to monitor the vocal signal in order to prevent a negative impact so called voice disorder. The availability of a device for vocal signal monitoring can be a benefit to the concerned users. The principal work was creating a suitable logger system, including software and hardware parts. The hardware part consists of logger system, conditioning circuitry, and power circuitry. The data obtained from the microcontroller was analyzed off-line using MATLAB. The device was organized to work in both normal and calibration modes. The analysis consisted of Sound Pressure Level (SPL) calibration and fundamental frequency (f0) estimation which are the most important parameters used in voice monitoring systems. According to the experiment, the calibration constant K was 1.76 Pa/V (0.12% standard deviation) and error average of the ECM was -1.8 dB (4.6 dB standard deviation) compared to the reference microphone.Collaboration works between engineers and physicians are advisable for a correct use of the estimated parameters.