ABSTRACT

Control of electronic devices commonly is switch or button which the user must be near the device. Using a voice command allows users to control an electronic device by simply saying commands via the audio input device, this provides another option to control electronic devices without hands.

System in this thesis use the digital signal processor (DSP) TMS320C6455 as sound processing and a simple wheeled robot consist of minimum system microcontroller and the motor as a driving. The method to process sound is Mel Frequency Cepstral Coefficient (MFCC) as feature extraction and Euclidean Distance for classification algorithms. The voice will be processed to produce a MFCC fector and will be compared with a database that has previously been stored in the DSP. Classification method used to calculate the distance between the sound input vector and vector database, the closest results database will be used as a decision. Next DSP generate DTMF signals and translated to a 4-bit form logic use DTMF decoder (MT8870 IC) as an input to the system microcontroller. Microcontroller responsible to controll the movement of motors on the system.

Problems encountered in this study is the presence of interference (noise) from the microphone, the pronunciation of the command must be clear and normal in less than a second. The results showed the system verify the type of sound input with the best accuracy is 63.33%. The system still cannot be implemented due to lack of accuracy.

Key Words: TMS320C6455, MFCC, Euclidean Distance, DTMF decoder, microcontroller, Microphone.