

EEE102 Term Project Proposal – Glove Synthesizer

Goal: Purpose of this project is to create a musical instrument that operates on a glove.

Description: Glove will give information about the hand position and hand movement. It will operate on one hand, vertical movement will determine the frequency of the output sound, horizontal movement will determine the amplitude of the sound. To start to operate the glove, user will press the center button of the BASYS3 board, the initial position of the glove will be a reference point for the board. Frequency and amplitude of the sound wave will be changed with glove movement, if the vertical position increases frequency will increase, similarly if vertical position increases then amplitude will increase. This information will be sent to BASYS3 by Bluetooth module, the information will be processed and frequency and amplitude of the sound wave will be determined. These information will be sent to synthesizer module.

Design: A gyro sensor will be attached to the glove to take data of the hand position and hand movement, these data will be transferred by a bluetooth module on the glove to the bluetooth module of BASYS3 board to be processed. Processed information will be passed to the synthesizer. Output will be given to amplifier module and from there to output device.

Components: Glove, gyro sensor (MPU-6050), two bluetooth module (HC-05), audio amplifier (Pmod AMP2), an output device (headphone or speaker with auxiliary cord), BASYS3 board.

Phase 1 Presentation

- Gyro sensor will be mounted to the glove
- Information from gyro will be processed
- Bluetooth modules will be mounted

Phase 2 Presentation

- A basic synthesizer will be constructed
- Audio amplifier will be mounted to BASYS3 to operate on an output device.
- Information from gyro sensor will be routed from bluetooth module to synthesizer.