[width=]block$_d$iagram.pngBlockdiagram

Dynamic audio system can be simplified as five measure blocks, each serving it's own application in order to provid

Depth estimation unit

../depth$_e$stimation$_u$nit/depth$_e$stimation$_u$nit.tex

Micro-processor

../micro$_p$rocessor/micro$_p$rocessor.tex

Mechanical Unit

As discussed in methodology, as the speakers propagates sound in oval. Hence shape we need to align the major ax

Mechanical units assembles with, two servo motors for each speaker (channel) one for panning and second for tilting

Servos are connected to hardware PWM pins of the RPi and controlled in real time using feedback of the angle algo

Audio Processing Unit

Usually an surround sound system contains two or more speakers in order to generate sound effect of moving object

Even if we direct the speakers towards listener's direction, it is encessary to adjust the sound levels of each speaker

To genrate best surround sound effect, this Audio processor unit assembles with 4 class AB audio amplifiers driven

Audio amplifier

Basically, audio amplifier is an circuitrary which is designed to increase magnitude of applied signal in order to pow

Sound signals are applied to non-inverting terminal of an amplifier through an voltage devider circuitrary (potentio

For this application we are using LM386N-1 as our amplifier.

Digital potentiometer

Digital potentiometers mimics the analog functions of a mechanical potentiometer. Where the resistance is controlle

As we discussed, to adjust the sound output of the audio amplifier we adjust the input voltage given to the non-inv

For this application we are using SPI compatible MCP42010 Digital POT,

Speakers

Speakers serves the 4 channeled dynamically adjusted surround sound to the listener. Usually they are mounted on