

Automation plays an important role in the world economy and in daily experience in the last few decades has witnessed a rapid development in audio systems.

Journey of audio systems begins with single channel audio system (monaural audio system) in year 1877, later in the year 1931 two channel Audio system (Stereo audio system) were introduced and in the year 2005 the most advanced air audio or surround sound system (Multichannel audio system) were introduced.

Modern sound systems are increasingly gaining popularity day by day, particularly since technical advances have lowered their prices, increased their qualities and features. One barrier to the greater experience while using these sound systems is its static nature in case of surround sound. Surround sound is a system of stereophony involving three or more speakers surrounding the listener so as to give a more realistic effect.

Even though high end audio systems provide good quality of sound but to achieve the surround sound effect the user has to configure the system manually depending upon his current position which is a very Tedious task. Whenever you are settling up your complex home theatre bundle, understanding the art and science of speaker channel and placement is the most critical step in enjoying your new sound system.

Current sound system needs manual setup according to the ideal sitting position to achieve a good sound effect at fixed position. This manual setup consists of speaker angles and speaker sound adjusted to create and sound pocket around fixed position. But this effect varies when we move away from the surround sound pocket created by speakers.

The aim of this project is to develop a real time system to determine the listener's position and distance from the speaker system. The real time system described here is based on ultrasonic sensors mounted onto servo motors controlled by separate micro controllers (slave). The core of the system is a master micro-controller termed as an audio processing unit which controls the speaker direction as well as sound levels. Distance measured from the rotating ultrasonic system, allows us to map 2 dimensional maps of the room in real time. With less system require-

ments, the surround sound pocket can be adjusted according to the listener's position.