# Rotating Camera Based on Speaker Voice

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**Abstract:**
In video conférence system different technologies are used to track the location of the speaker voice. Audio tracking and video recording. These system plays an important role in conference meet. In video conferencing system the camera captures the entire persons or employees and record their conversions available in conference room. This camera limited in one direction. This makes communication ungainly. So overcome this issues we design to implement an automatic system which interfacing with motor by tracking the voice of the speaker which idea has become increasingly widespread in the workplace. This system is divided into software and hardware parts. Firstly this designed system, to be placed of the center of the table and using the microphones to track the voice of the speaker then with the help of motor camera turns to person so that the emphasis is on the person currently speaking.

**Keywords:** video conferencing, ARM 7 (microcontroller), microphone, microcontroller, motor, camera, communication, recording.

## I. INTRODUCTION:

The voice consists of sound and human voice is part of human sound production. In conventional video conferencing systems, a person is record the entire process and all the recording is done manually not automatically by controlling the movement of the camera and this arrangement may not work effectively in a conference room where a number of persons are talking at a given time. In the web conferencing many cameras are mounted at fixed points and these cameras capture poorly all directions if there peoples sitting as far as end of table and it is not clear who is speaking. We provide a rotating camera or voice tracing camera that will automatically track the speaker and capture the video In the all directions, allowing to carry on the normal meeting. So the members of a meeting should be focused on who is speaking, our design system would be useful to companies that frequently use web conferencing. The aim of our project is making a capable device which is recording video session of a meeting or a conference. It eliminates the human effort, cost, and security issues. This system using microphones to detect the voice. This proposed system first track down the speaker voice by using microphone and then move the camera towards the speaker. We divide it into two parts, software and hardware part. We develop a program in MATLAB software which will trace speaker's voice by using Microphones. In hardware part we used microcontroller, steeper motor, motor driver, USB cable, microphone, camera, power supply etc. It is basis of our project and detail discussion are in next sections.

## II.LITERATURE SURVEY:

1] In July 1985, by J. Acoust introduced computer steered microphone arrays for sound transduction in large rooms. 2] In year 1992 developed an algorithm for determining talker location from linear microphone data array. The quality of sound pickup in large rooms-such as auditoriums, conference rooms, or classrooms is impaired by reverberation and interfering noise sources. 3] In July 1995, by Joonyou Maeng last years this concept has been evolved over the first of its kind with advanced work. 4] In the video conference in year 1996, by Brandstein, Michael S, Adcock, John, Infrared technology was employed to track the position of the speaker. 5] By Paul C. Meuse, Harvey F.Silverman developed Microphone array technology is introduced this whole concept which is wireless array of microphones in order to improve the reception of a sound and to allow location of the position of the speaker.6] These degradation can be minimized by a transducer system. The signal-seeking transducer system is implemented as a dual beam "track while scan" array. It utilizes signal properties to distinguish between desired speech sources and interfering noise. This research and derived equations were focused on using 4 microphones to locate a sound source.

## III. BLOCK DIAGRAM OF SYSTEM:
Block diagram contains following modules given below:
- ARM 7 Microcontroller
- Motor
- Motor driver
- Microphone Array
- Camera
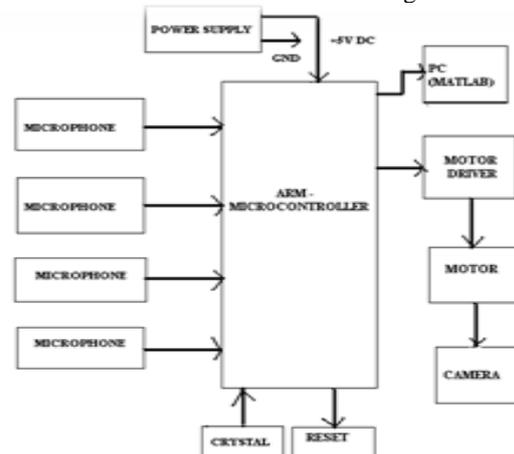
All the modules are shown in block diagram as follows:



**Figure.1. Block diagram**

## IV.WORKING:

### A.MICROCONTROLLER

The microcontroller is use in this system which is central control unit of system. Microcontroller collects the data from microphone array and decides in which direction the speaker is located and it controls the motor control unit. Using microcontroller motor control unit tells that how to direct the motor movement. An algorithm will be running on the motor control unit to determine the main speakers.

### C.MOTOR

Motor is an electromechanical device. This converts the electrical signals into discrete mechanical movements. Motor controls the position by its nature of rotation. Speed of the motor rotation is related to the frequency of the voice.

### DC Motor

In this module we use DC motor. We choose the L293D; it will get inputs from that chip and rotate accordingly. DC motor would be controlled by Motor driver. These motor can rotate 360 degrees and in both clockwise and anticlockwise as per need. DC motor has controls the position depends on it is nature of rotation. The motor will carry a camera and control its rotational movement in order to track the voice.

### B.MOTOR DRIVER

Motor driver are used to interface micro controller and stepper motor. In this module data receives from micro controller unit and control the motor which we have use. These motor move to certain direction so that the rotate at the speaker. We use L293D chip to drive the motor. It gets the pulse input from the Micro controller and amplifies the signals.

### E.MICROPHONE ARRAY

Microphone array means the numbers of microphones are operate in tandem. We use the four microphones in this module. Microphones reactive the voice from all directions which is converts in the form of electrical signals and these signals reactive the sound information about the voice coming from all directions.

### F.CAMERA

In this module we use camera for recording images which is pre built webcam. Function of the camera is very similar to the function of eye. Latin name of original device is "Dark Chamber". The camera fit on a top of the motor rotor and which is connected to the computer via USB cable. Camera captures the video and sends this video on server to see that captured conference activities for the absent employees in conference room. This camera allows to verified output. Our camera selected for any videoconferencing software, like Skype.

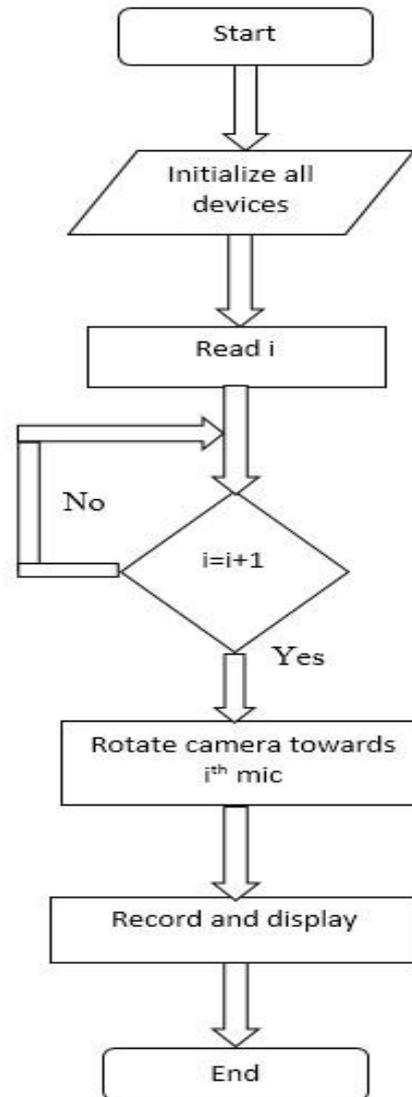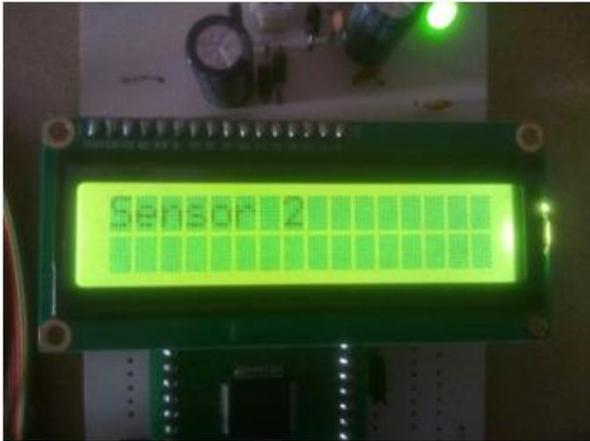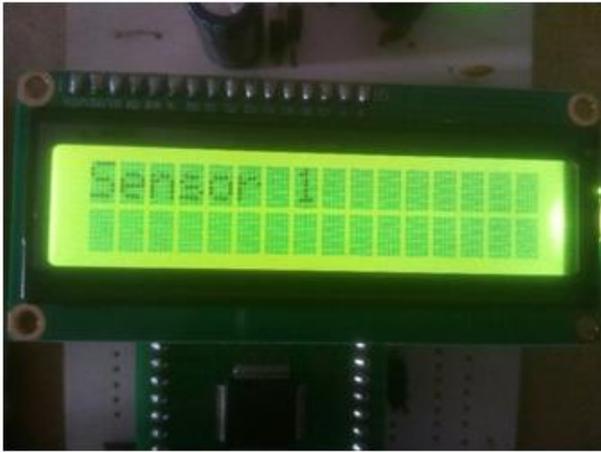

**Figure.2. Camera**

## V. FLOW CHART:



**Figure.3.flow chart:**

## VI. RESULTS :

## VII.ADVANTAGES & APPLICATIONS:

### Advantages
- It is useful in video conferencing system.
- This system is reduce the human power.
- It can be used in point to point conferencing system.
- Recording meeting process without cameraman and at a lower cost.

### Applications
- This project is used in game shows, quiz shows etc.
- This application also used in forest to capture and record wild life.
- It is also used in military applications.
- Useful in automated recording in conference room.

## VIII.CONCLUSION:

We able to achieve all the proposed features and functions. When two peoples are speaking, then camera would be moved on these two peoples using motor. Our camera could be rotated at the different directions. This designed system runs smoothly. It can track a speaker in two seconds and the camera rotates towards the speaker within one second. It provides a good resolution display from the cameras and does good job of ignoring other noises, which is determining who is speaking. It will be big beneficial for companies.

## IX. ACKNOWLEDGEMENT

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