

# Speech Recognition for Patient Monitoring using Wireless Networking

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**Abstract-** This paper presents a new sensor health monitoring system using the Kinect device to monitor elderly people and detect when they are likely to fall by measuring their gait, and analyzing change in posture when they change from sitting to standing or vice versa. Support vector machine is used to analyze the gait and posture data obtained from the Kinect device. Several experiments were performed to evaluate the proposed system and experimental results as using the Kinect device will be presented.

## I. INTRODUCTION

Speech recognition for the patient monitoring system using wireless network is the method for monitoring the patient and its recognize the patient needs. Automatic Speech Recognition (ASR) is the technologies of spoken language into text by computer. The present invention relates to the remote monitoring of a patient that incorporates the ability of that patient to call or help during emergency situations without carrying a specific device on their person. More specifically, the present invention relates to monitoring system with acoustical device and speech recognition that are capable of recognizing a patient's requesting for assistance and can automatically initiate a device for the help. Here the patient monitoring is the main process and the technology support is needed to automated the medical issues. The ability to communicate our needs is one of the life's most basic activities. Communication involves the exchange of information between a sender and a receiver. It's a two-way street—the sender and receiver are both necessary for communication to take place. For communication to be effective, the sender and receiver each needs to understand the messages being communicated and the method being used to communicate.

## OBJECTIVES

It consist of two objective

### ➤ Speech Recognition

- 1] Store the list of keywords in database.
- 2] Recognize the speech from patient by kinect device.

### ➤ Send the Alert

- 1] Send the SMS or mail through the tiwilo software .

## LITERATURE-SURVEY

The papers below gives the brief information about different techniques developed for overcoming the speech disability. GEMMA HORNERO et.al [1] describes that impairment of speech is not considered as obstacle majorly but this is still a problem for the people who are suffering when they make public interaction. This survey provides various disability of speech in adults and also provides the available technology, which uses computer simulation to facilitate the improvement of communication in the people. The report provided by DIIR gives the picture that 2.19 crore people are suffering from the disability. Where India keeps it mark at 2.13% of the general population and 7% A portable hand held speech generating device for speech impaired affected by disorder related to speech and this percentage is increasing on the verge of life, early stage 4 to 10% of children worldwide are affected by this problem [1] & [2]. Many of the children are lucky as this is identified at the early stage and it can be treated with a specific training program. As there is no clear picture for this disability in children, SLP&SLT often adopt a technique based on motor learning in treatment to this sufferer. Dr. G. Sadashivappa et.al [2] proposed a smart phone running on an android operating system. With the touch screen is used. The specific application developed for assisting is installed in the smart phone when the user starts the application button. A specifically intended for start speaks command is provided. When this is pressed DATE is given as basic specific voice command output. This technology has its own limitations because the user must be well known.

## METHODOLOGY

### Kinect

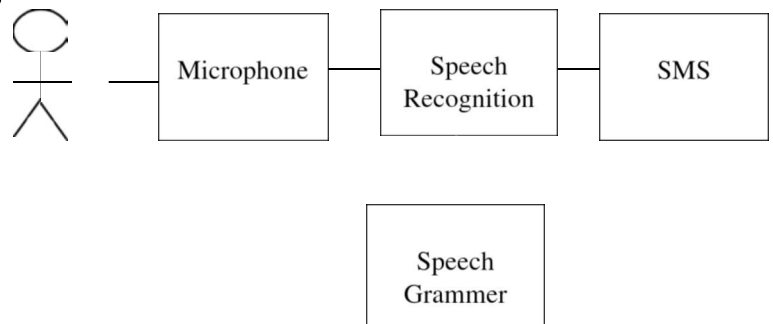


Fig 1: Block diagram of Patient Monitoring system using Kinect

Automatic speech recognition(ASR) is the technologies of spoken language into text by computer. speech recognition for the patient monitoring system using wireless network is the method for monitoring the patient and its recognize the patient needs. Automatic speech recognition (ASR) is the technologies of spoken language into text by computer. Here the patient monitoring is the main process and the technology support is needed to automate the medical issues. Firstly we analyze patient response and recognize the patient needs by using kinect sensor. This sensor consist of micro phone and camera, IF light sources. Microphone sense the patient voice within the distance of 5to6 meters. Speech grammar SDK tool is used for the coding the list of patient needed keywords. After it get processed by using visual studio software. Visual studio tool is used to compare the patient recognized speech signal and stored of listed keywords .If the stored keywords and recognized speech are same then its needs to send a alert to the nearer physician. Here we using twilio online SMS path for sending SMS to physician as shown in the above figure1.

### Applications

1. In the area of telemedicine technology.
2. Patient monitoring in remote health caring application.

### Advantages

1. User-friendly operation.
2. Remote information convey through SMS.
3. Suitable for all ages.
- 4..Provides assistance to the patients.

### Software specification

1. **Visual studio**
2. **Tiwiilo**
3. **C#sharp**

### Hardware specification

#### MICROSOFT KINECT

Building computer vision based applications had always been a difficult task for majority of application developers, since it requires lots of mathematics & similar algorithm information that researchers use in Computer vision, Signal processing and other fields of technology. Microsoft Kinect reduces a lot of development and hardware restriction that developers faces in past but still “What to do” & “How to do” . Kinect integration with other systems (i.e. Arduino Platform) can be used for several applications.



Fig 2:Kinect

Figure above shows Kinect device. Kinect is a motion sensing input device by Microsoft for the Xbox 360 video game console and Windows PCs. Based around a webcam-style add-on peripheral for the Xbox 360 console, it enables users to control and interact with the Xbox 360 without the need to touch a game controller, through a natural user interface using gestures and spoken commands.

The project is aimed at broadening the Xbox 360's audience beyond its typical gamer base. A version for Windows was released on February 1, 2012.

After selling a total of 8 million units in its first 60 days, the Kinect holds the Guinness World Record of being the "fastest selling consumer electronics device". Microsoft released Kinect software development kit for Windows. This SDK will allow developers to write Kinect enabled apps in C++/CLI, C#, or Visual Basic .NET.

The Kinect sensor is a horizontal bar connected to a small base with a motorized pivot and is designed to be positioned lengthwise above or below the video display. The device has two versions i.e. **Kinect for Xbox 360** and **Kinect for Windows** (for commercial purpose).

The device features

- RGB camera.
- Depth sensor (IR).
- Multi-array microphone.
- Motor to adjust camera angle.

In addition to the above features, Kinect for Windows offer few extra features i.e.

- **Facial recognition**  
enables to track multiple points in your face like Skeleton Tracking.
- **Near Mode**  
enables the camera to see objects as close as 40 centimeters in front of the device without losing accuracy or precision, with graceful degradation out to 3 meters.
- **Seated or 10 Joints Mode**  
skeletal tracking which provides the capability to track the head, neck and arms of either a seated or standing use.

#### RGB CAMERA

The default RGB video stream uses 8-bit VGA resolution (640 × 480 pixels) with a Bayer color filter, but the hardware is capable of resolutions up to 1280x960 (at a lower frame rate) and other formats such as UYVY.

#### DEPTH SENSOR

The depth sensor consists of an infrared laser projector combined with a monochrome CMOS sensor, which captures video data in 3D under any ambient light conditions.

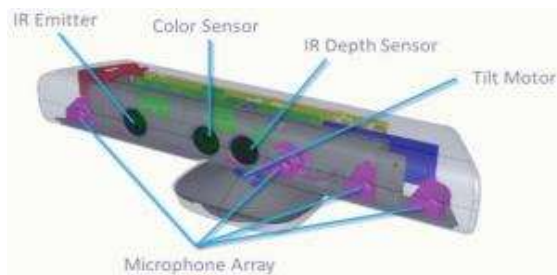


Fig 3: Depth sensor

The sensing range of the depth sensor is adjustable, and the Kinect software is capable of automatically calibrating the sensor based on gameplay and the player's physical environment, accommodating for the presence of furniture or other obstacles.

The monochrome depth sensing video stream is in VGA resolution ( $640 \times 480$  pixels) with 11-bit depth, which provides 2,048 levels of sensitivity. The Kinect sensor has a practical ranging limit of 3.9 – 11 ft. distance when used with the Xbox software.

### Result

Step 1: The images shown in Figure 4 indicates that when the user selects an image corresponding to —I WANT WATERI, then the system generates the text and a SMS for indoor operation as shown.

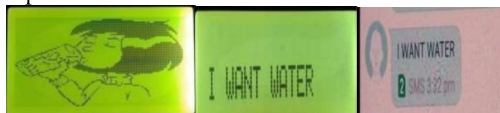


Fig 4:Output images of —I WANT WATERI

Step 2: The image shown in Figure 4.5 indicates that when the user selects an image corresponding to —I AM HUNGRYI, then the system generates the text and a SMS for indoor operation as shown.



Figure 5: Output images of —I AM HUNGRYI

Step 5: The images shown in Figure 4.6 indicates that when the user selects an image corresponding to —I LIKE ITI, then the system generates the text and a SMS for indoor operation as shown



Figure 6 Output images of —I LIKE ITI

Step 7: The image shown in Figure 4.8 indicates that when the user selects an image corresponding to —I AM HURTI, then the system generates the text and a SMS for indoor operation as shown.



Figure 7: Output images of —I AM HURTI

Step 11: The images shown in Figure 4.12 indicates that when the user selects an image corresponding to —TAKE ME TO WASH ROOMI, then the system generates the text and a SMS for indoor operation as shown.



Figure 8: Output images of —Take me to wash room

### CONCLUSION

Differently abled persons require assistance at any time during a day to perform their work or job in a satisfactory way. Such people may be of different aged groups and require assistance depending on the kind of work they do at home or hospital. For such assistance a well qualified and trained people is required depending upon the disability of persons needing the assistance. This project is handy tool for such situations to overcome this problem a model is designed so that any assistance can be Obtained by choosing the corresponding voice. By using kinect sensor for recognize the patient needs then its compares recognized speech and stored keywords for this we use visual studio and speech grammer. Which in the format of text with SMS for wireless assistance using twilio online path for sending SMS. This additional feature will make this overall system a user-friendly and can assistance for aged people.

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