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At Low Cost, Easily Accessible Telepresence Using Mobile Phone

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Abstract

The term telepresence was tossed by Marvin Minsky in an article in 1980, that focused on giving the remote participation a feeling of actually being present.

Index terms—

This word brings a picture of video conferencing into our mind immediately, but it refers to the situation when a person is present at one place and it could communicate verbally and non verbally and could be able to stimulate his actions at other place too. We can well understand it by an example like:-a person is controlling a robot and that robot is driving a car. Or a doctor from a far away place is operating a patient, the technology of today demands more, so the researchers and developers of day today are trying to achieve each and every possibility of telepresence.

Till now telepresence has got remarkable progress, it uses a remote access to a device i.e a robot usually.

Main achievements are like the use of telepresence in surgery, it has got high precision but it is for specific purpose only and is very costly and bulky. b) Remote control: access a device from a distance A r remote control is an electronics device, most commonly used in television sets,car locks ,home appliances etc. The remote control is commonly called remote. Commonly, remote controls are Consumer IR devices used to issue commands from a distance to devices like tv , DVD players etc. Now a days remote controls don't just optimised to just few keys , the expectation of a user is huge , he wants to operate each and every thing from his position at rest and wants that the machinery should do all his work according to him via remote only.Most of the remotes communicate to their respective devices via infrared (IR) signals or via radio signals.

When we see around we can see a great change in our technology, in case of remote controls great changes are being there but the thing which makes the growth bounded is that it is "bounded", yes talk about any of the remote control system it definitely have some boundations and limits but we propose a remote access which have greater coverage, one can E-mail : amrit.p.s.brar@gmail.com E-mail : raman.makhaik@gmail.com access device from any corner of this world (having mobile network). c) What is DTMF (dual tone multi frequency)

When we press any button on a telephone's keypad, a specific signal is being generate which is produced by two different signals i.e one high signal and one low signal. The produced signal is a new frequency that generates a new tone , the resultant of the tones selected by perssing a button from a row and column respectively. The resultant frequency signal is "Dual Tone Multiple Frequency". These tones are very specific and unique.

Hence A DTMF signal is the algebraic sum of two different audio frequencies, a low frequency and a high frequency selected according to the button pressed.

Each of the row i.e low frequency and the column i.e the high frequency groups comprise of four frequencies for the various keys present on the keypad. Two different frequencies, one from the high frequency group (column) and another from the low frequency groups (row) are used to produce a new discrete DTMF signal to represent the pressed key uniquely.

The amplitudes of the two sin waves should range in between: $(0.7 < (\text{Value of A/B}) < 0.9)$V The frequencies are chosen such that they are not harmonics of each other. The frequencies associated with various keys on the keypad are shown.

When we send DTMF signals to the telephone exchange through cables or wirelessly, the servers in the telephone exchange identifies those signals and makes the connection to the particular number that you are calling. The row and the column frequencies are:-(D D D D) A 2012 [1] [2] [3] [3]

1 Year

For example:-If we press the digit 2 in the keypad it generates a resultant tone signal which is made up of frequencies 697Hz and 1336Hz.

If we press digit 9 it will produce the tone taken from tones 941Hz and 1477Hz.

In simple phones the matrix of numbers on the key pad is 3*4 but actually it is of 4*4 so there are some special characters: A, B, C, D. these are being used for special purposes but rarely.

2 II.

3 Present work a) Objectives

Main objectives are:-To transmit and receive the DTMF signals.

To control the device using those DTMF signals.

To assign particular action or motion to device for each DTMF signal.

To use a 3G enabled phone and a camera on the device and communicate via it.

To do different tasks using the system.

To optimize the resources and increase performance.

To complete the above tasks within time and less cost. Achieve telepresence.

Some other ideas that might be tried:-Try to send video signal over 2G network. Make the device that we are operating itself intelligent and interactive. We would prepare the whole system setup which depends on software, electronics and mechanical aspects.

4 Diagram of DTMF receiver

Let us assume that the signal is being transmitted from the mobile and now it reaches the cm8870;(D D D D) A 2012 Year c) Significance

This idea if implemented would be a great add on to the field of telepresence as till now telepresence is possible using high speed internet using computers or connected cables etc and the setup is costly. But in the proposed idea the telepresence would be possible with the most common gadget of todays' life that is "a mobile phone" and using 3G we would be able to make telepresence a common phenomenon and people could do many tasks using it like:-Meeting people Driving a car(very enhanced) Defusing a bomb Look after your house from anywhere in this world.

The feature which makes it more significant is that it would have no limited area of access and you would be able to use it even from abroad, the condition is that your 3g mobile should work at that place from where you want to operate. The person who is operating is also be able to see the other end and communicate at other end and would be able to do some work also this is what is called telepresence. As the work done by us is only an initiation in this field so there is a big scope of work to be done in this field. As telepresence till now was not for common man and it was being achieved by bulky setups and machinery. We are proposing a new way of achieving telepresence.

5 III.

6 Result and Discussion

7 No

In future our robot if modified accordingly would be able to:-

8 b) Conclusion

We conclude that it can be said an initiation or a proposal of new way of telepresence by the use of which telepresence would become everybody's cup of tea. The cost is less and ease of access would make it more and more beneficial. To make it easiest to access.

To make it least costly.

To have simplest setup for user.

To make it such that everyone could use it.

Bottle necks? Hardware setup. Signal enhacement on receiver end. Cost effectiveness.

Only 16 distinct signals.

9 Time consuming concept.

As the work is practical so difficult to make changes.

Year [1]

Figure 1: Introductiona)

AT LOW COST, EASILY ACCESSIBLE

Figure 2: 2012

TELEPRESENCE

Figure 3:

T

Figure 4:

USING MOBILE PHONE

Figure 5:

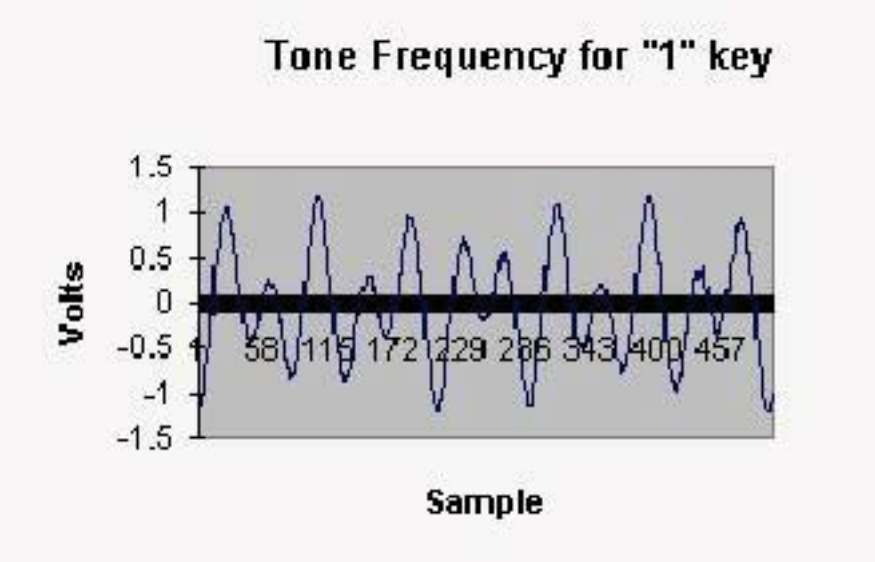
Tone Frequency for "1" key
Volts
1.5
1
0.5
0
-0.5
-1
-1.5
58
115
172
229
286
343
400
457
Sample

Figure 6: