ITSP 2016-PROPOSAL

Computer vision

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ABSTRACT

The idea of our project is to have more immersive experience through google cardboard. We want to build prototype version of google glass with gesture control. Well the end product's BASIC functionality will be like google glass (https://www.youtube.com/watch?v=vG9vfjdcmRw) but it will look like samsung gear VR. It will do more what google glasses can do and that's the coolest part of the project, "computer vision" like if you are seeing a book in some book store it will automatically in real time give you reviews, cost etc in a small window such that viewing is not disturbed. Since this is new in technology the possibilities are endless. Actually this is the technology that will make newspaper interesting like the newspapers you saw in harry potter movies. If we get some time ahead we will implement some really cool augmented reality games.

Components required

Estimated Cost -

Google cardboard Rs 1000
Portable HD wireless webcam Rs 5000
HDMI USB cable
Smart phone

Motivation

We saw the sixth sense video by Pranav Mistry at TEDIndia, it was really awesome so we decided to build our project on this (https://www.youtube.com/watch?v=YrtANPtnhyg). For this project we required a light portable projector, but the cost of this projector was 23k. So due to funding limits we couldn't choose this project. So we modified the idea to decrease the gap between digital and physical world and we stumbled upon this idea. Getting information will now be much more easier and comfortable.

Implementation

First we will get the surrounding through the webcam and process the image to get the hand gesture and other meaningful objects in the surrounding and classify them and process them according to the categories in which they fall. For e.g. considering a scenario in which you are standing in a library and holding a book in your hand first it will get the objects with considerable size and known shape then it will try to identify each object in which category it falls then it will run queries based on the object. Actually the program that essentially is computer vision is already developed by imagenet [I] and is open source and support api. See the reference.

Plan Of Action

Till may 4 : getting equipped with knowledge of basic image processing through openCV and other augmented reality techniques and paradigms

Week I : setting up google cardboard and implementing basic i/o operations on the google cardboard

Week II : build gesture recognition programs

Week III : build object detection and recognition programs

Week IV : testing and calibration

Week V : implementing other things if possible such as controlling mouse with gestures

References

Link for computer vision -
https://www.youtube.com/watch?v=4oriCqvRoMs