

Gyrex- Alternative Augmented Communication Device Design Brief

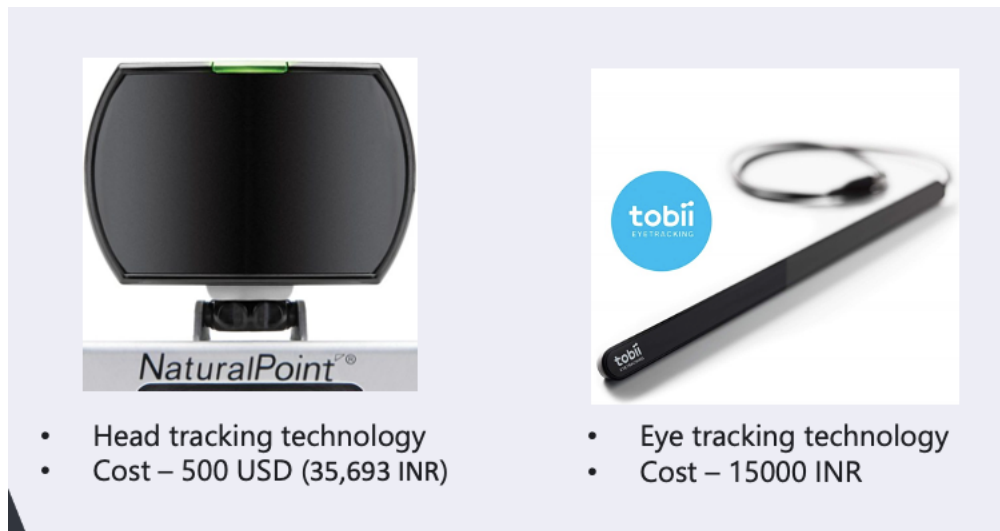
Anudeep Enosh Prasad Dasari, Ranganadh Kollapureddi, Manasa Kondameedi, Elluri Hemanth

B.V. Raju Institute of Technology, Bachelor of Technology

Problem Statement:

In this fast-paced world men and kids are left out because of differently abled such as people suffering with cerebral palsy, meningitis and much more due to which they lose the ability to operate the mobile or PC which disconnects them from the internet world and also lack in communication.

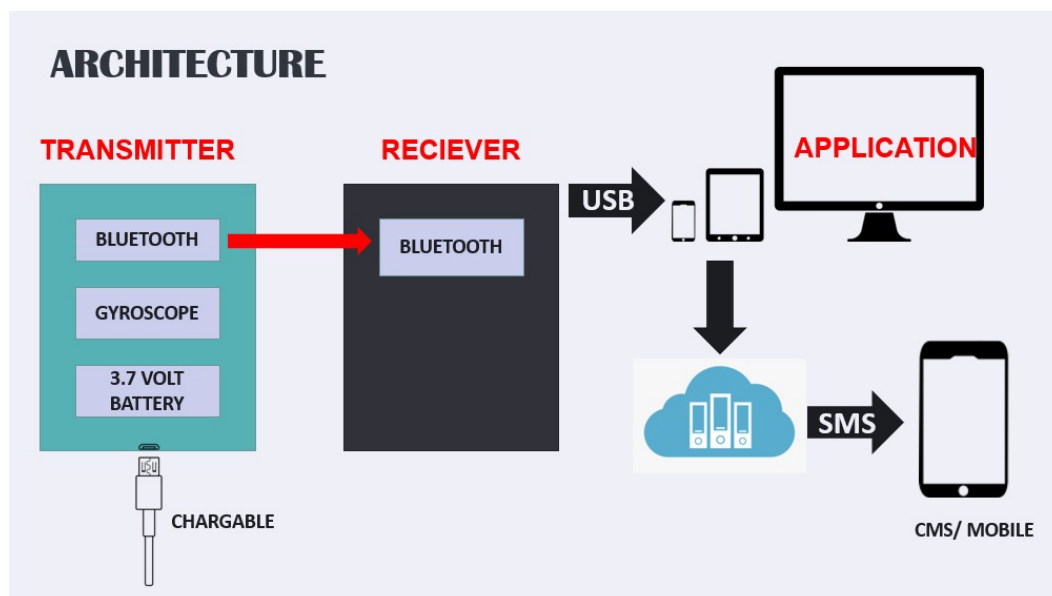
Existing solutions:



Head tracking and eye tracking technologies: These products cost a lot and can't be afforded by a common man. They also cause a lot of stress when used continuously used for long hours and requires special training and concentration to operate.

Our device GYREX is a simple cost effective device which can be worn to any movable body and doesn't require any special training, it's operation is equivalent to that of a normal mouse.

Design and final approach:



GYREX is an alternative augmented communication device which works through Bluetooth communication. Our device mainly consists of two parts. They are the transmitter and the receiver. Transmitter is worn by the User and receiver is connected to the mobile or PC which has to be operated. MPU present in the transmitter is the heart of the device. It senses the movements and sends these signals to the receiver through the Bluetooth. Receiver Bluetooth then receives them and converts these signals into appropriate cursor movements which is used to operate the mobile or the PC.

Third part of the device is an application. It consists of three modules. First is an SMS service through which caretaker can be informed of the emergency or the difficulty being faced by the user much more effectively and efficiently. Second is the pain analysis which is specially developed for the post-operative care where the patient can pin point and locate his pain and extent of the pain. Third is the education, which consists of alphabets, number and few other things in order to assist the differently abled children to learn.

Results:

Gyroscope readings (V_x , V_y) of the wearable mouse Transmitter device were taken and the following graphs were plotted. In the graph below Blue line indicates the V_x and Red line indicates the V_y .

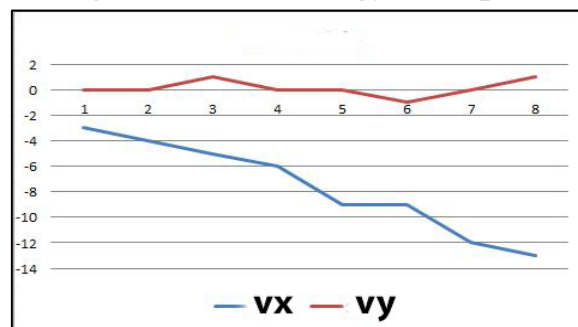
In Fig.1 the values were recorded when the mouse was moved in the left direction. When the mouse moves in left direction V_x values extracted are negative, because gyroscope enters the negative X-axis.

In Fig.2 the values were recorded when the mouse was moved in the right direction. When the mouse moves in right direction V_x values extracted are positive, because gyroscope enters the positive X-axis.

In Fig.3 the values were recorded when the mouse was moved in an upward direction. When the mouse moves in upward direction V_y values extracted are positive, because gyroscope enters the positive Y-axis.

In Fig.4 the values were recorded when the mouse was moved in the downward direction. When the mouse moves in downward direction V_y values extracted are negative, because gyroscope enters the negative Y-axis.

Based on the V_x the Gyroscope mouse cursor desired position achieved by V_y , which is by Gyroscope.



and V_y values of the onscreen operates and the of the cursor is varying V_x and tilting the

Figure 1: Mouse moving in the left direction.

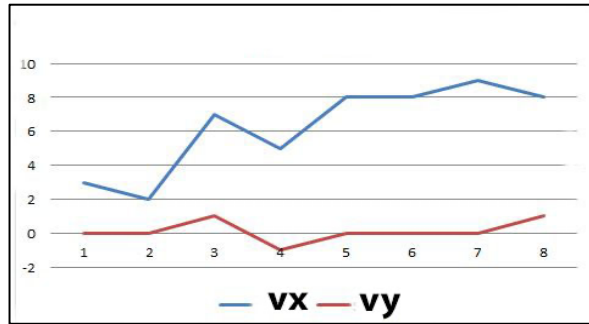


Figure 2: Mouse moving in the right direction

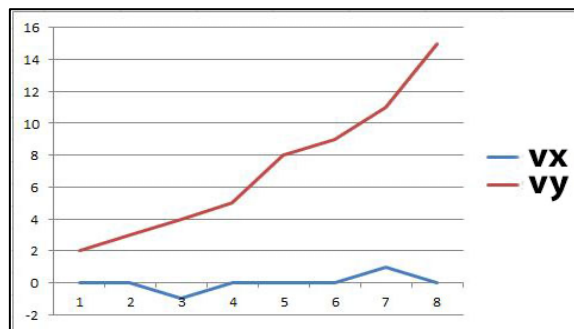


Figure 3: Mouse moving in an upward direction.

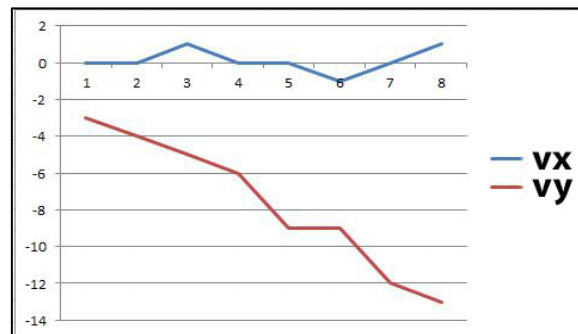


Figure 4: Mouse moving in a downward direction

Cost:

During the initial stage of development prototyping could cost around 4000INR .

Significance:

In ICU's and rehabilitation centres communication gets very difficult due to oxygen masks, ventilators, any other equipment's connected to the patient or in other cases such as suffering with cerebral palsy or any other disability due to which person can't communicate effectively our device comes in handy. Our device can be used in post-operative care, autism, special schools in order to educate the differently abled and help them live normal lives.