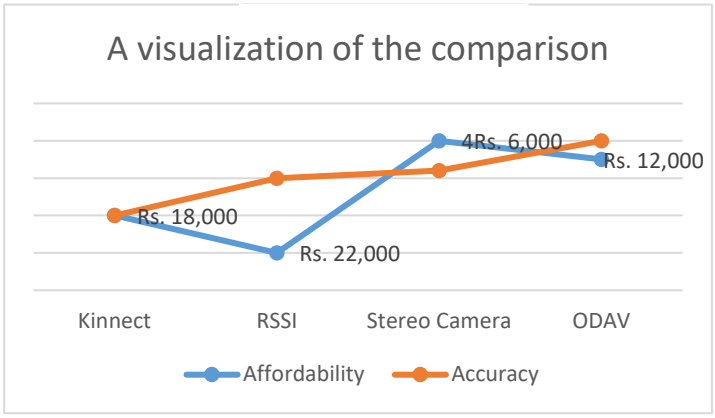
OBSTACLE DETECTION & AVOIDANCE FOR THE VISUALLY IMPAIRED (ODAV)

Abstract

ODAV is a device that lets the user navigate through indoor environments, with ease and comfort.

Background

285 million people are estimated to be visually impaired worldwide, of whom about 90% live in low-income settings.



Proposed Solution

To produce a sensor system that gives better results than its market competition, at an affordable rate for the everyday household. Our solution is to fuse Stereo Vision with Ultrasonic Sensors.

Results

Disparity maps were used to obtain information regarding depth of objects. We used Minorvu 3D camera, for the said purpose.

Person in Reality

3D Camera

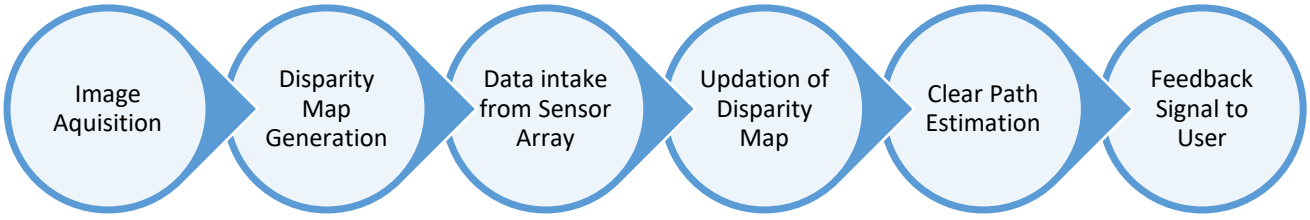
Disparity Map

Conclusion

The end product will be a prototype capable of detecting obstacles and charting a clear path in real time. The clear path will then be relayed to the user through feedback.

The prototype can easily be refined to a wearable device for the visually impaired, in the future. Based on the success of our results, sensor fusion can be made applicable in other fields as well.

Process Flowchart



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