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Virtual Reality Based Post Flood Relief System

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ABSTRACT: This paper describes the virtual reality based flood relief system by knowing the need of the Flood victims and provides their need under unmanned condition. Floods have adverse effects on the economy, environment and life of the people. People face a lot of problems during flood. There might be a shortage of food, they cannot get fresh water to drink, they lose their belongings, they can fall sick due to infectious diseases. To rescue them from these adverse effects we have proposed a system which uses VR technology. By using this proposed model we can identify the basic need of the flood victim and then the dispatch section of this model will distribute as required by them.

KEYWORDS: Virtual reality, Hologram, Zigbee.

I. INTRODUCTION

Urban floods have become a constant threat in human life and property. Days of heavy rain have caused severe destruction over 13 states like Kerala, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Tamil Nadu, Goa, Odisha, Andhra Pradesh, Pune, Punjab, Assam and Bihar in late July and early August, 2019. Tamil Nadu was hit with unprecedented rains and flood on December 2015. Chennai saw flooding due to heavy rainfall. Citizens grouped together to rescue others as water level rose in to the homes to alarming levels. The storm brought life to a standstill and almost everyone experienced some kind of losses. More number of people were homeless and vulnerable at the mercy of weather .The lack of warning of the flood in Chennai made it difficult for those people with disabilities .While some in need of rescue ,others lost essential implements that are washed away or ran out when the water started raising leaving them more vulnerable than ever before. Government supplied facilities such as food, water, blankets, medicine. When people needed food they received medicine in return, which is inappropriate for their requirement and never been fulfilled. A private helicopter carrying flood relief material to the victims and the helping hands used Gesture methods by waving hands from the helicopter and providing supplements, that is an existing system. To overcome this difficulty, we introduce this new methodology of using a Virtual Reality that is projected from helicopter at a far distance.

1. a VIRTUAL REALITY

Virtual reality is indistinguishable experience that can be similar to or completely different from the real world. Application of VR include entertainment and educational. Several other types of VR style technology include augmented and mixed reality. Nowadays the Virtual reality systems use either their own type of headsets or multi projected environments to develop realistic images, sound and other sensations that simulate a user's sense of nature in a virtual environment. A person using virtual reality is in a position to seem round the artificial world, move around in it and interact with virtual features or items .The effects is usually created VR headsets consisting of a head mounted display with a little screen in ahead of the eyes, but it can be created through specially designed rooms with multiple large screens. Virtual reality typically incorporates auditory and video feedback, but may also allow other types of sensory and force feedback through tactile and technology.



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1. b HOLOGRAM

Hologram is the interference pattern that can be recorded between a point sourced of light of fixed wavelength (reference beam) and a wave field scattered from the object (object beam). It is recorded in a two- or three-dimensional medium according to the need of the user and it contains information about the three-dimensional wave field of the recorded object. When the hologram is illuminated by the reference beam, the diffraction pattern recreates the light field of the original object. The viewer is ready to see a picture that is indistinguishable from the recorded object. The holographic plate may be quite recording medium, during which the 3D reflection of an object is stored. While in a recording media the grooves contain information about sound that can be used to reconstruct a song, a holographic plate contains information about light that is used to reconstruct an object. The information about light is coded in the form of bright and dark micro interferences. Usually, Due to the high spatial frequencies it is not visible to human eye. This photographic technique of recording light scattered from an object and presenting it as a 3D image is called Holography. Even if a small piece is deleted, it will still contain the entire holographic image. In basic form, three basic elements are necessary to create a hologram: an object or person, a laser beam, and a recording medium. To intersect the light beam, a clear Environment is also recommended. By using virtual reality, a holographic image is projected. And this image helps us to understand the need of the victim. Then the corresponding requirements will be reached safely to the flood victims.

II. EXISTING SYSTEM

The existing system was based on Vision- based and accelerometer or gyroscope based method. The Vision based method deals with identifying the people through vision and waving hands at them. Accelerometer or gyroscope based method deals with the sensors that acquire acceleration and rotational information in airplanes. And they have some limitations like ambient optical noise, slower dynamic response, and relatively large data collections and less accuracy.



Fig .1. View of Flood affected area from the helicopter.

III. PROPOSED SYSTEM

The proposed system works by using virtual reality based hologram torch light is used to project an image on an open area to project a 3D image that composes the supplements for the needy. In order to transmit and sense the signals, Zigbee is used. They pass data through a network to the Arduino UNO that acts as a microcontroller. Thereby the microcontroller activates the motor. The motor for the respective item operates and then it is dropped safely to the flood victim.

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TRANSMISSION SIDE:

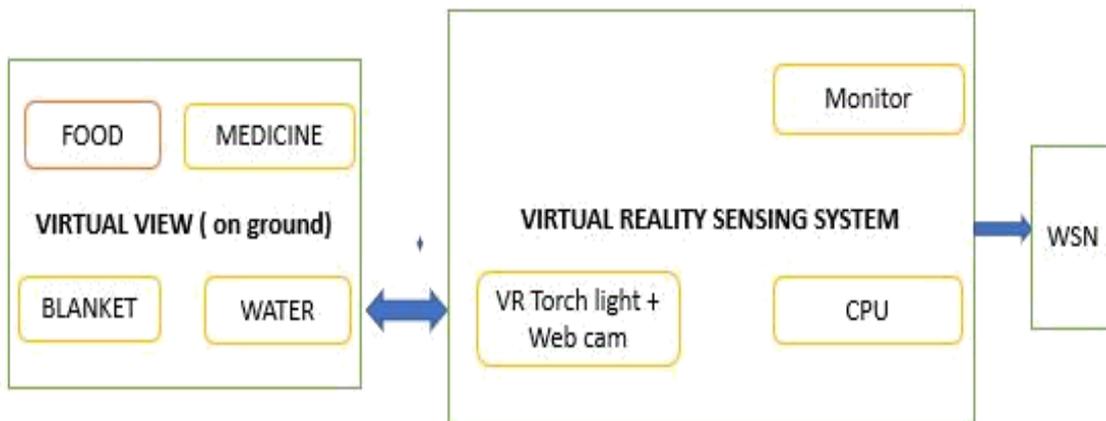


Fig 2 Transmission Side

RECEIVER SIDE:

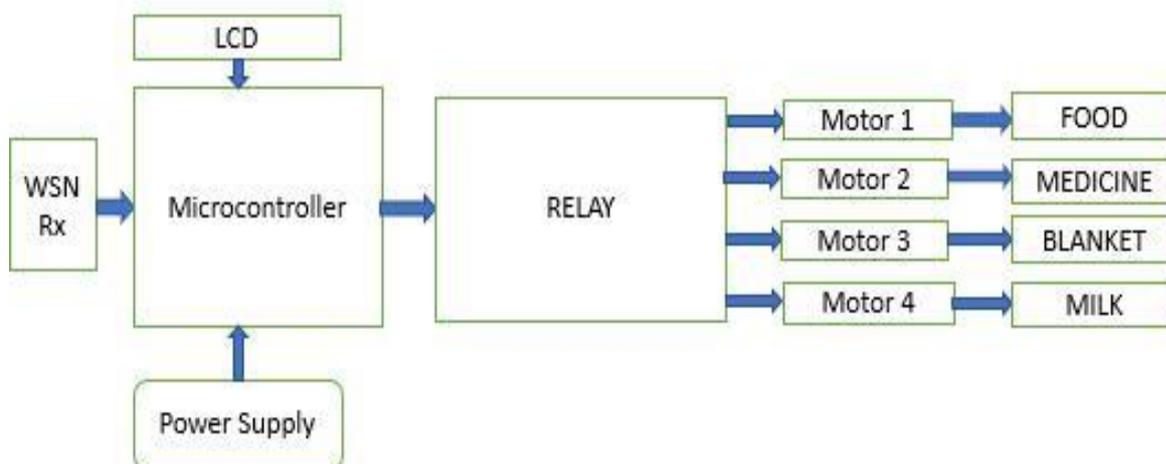


Fig 3. Receiver side

The VR torch works on Hologram technique, consisting of 4 type of images such as food, medicine, water and clothes and the needy blocks the image based on his requirement. The Web camera senses the blocked image and a webpage is



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created. The web page is created on the computer by Dotnet language based on software tool and the image is detected by Machine learning. And it recognize dots based on machine learning and scanning process. In each image, there are pixels of different values and those values are sent in Binary type to the Zigbee Tx (WSN) medium signal. The receiver section gets a binary value based on ZigBee present at receiver side. This value is sent by UART communication based on Arduino uno (RISC MECHANISM). The Arduino uno is used to give input 12v relay. The Relay is used to give the power supply of 12v motor. Each motor runs based on the need of the flood victims and indicates through the LCD display. The LCD is used to display the function based on the flood victim's need.



Fig 4: (a) Holographic image of the victim's requirement

(b) Prototype of the proposed model

IV. CONCLUSION

The proposed model of this paper helps to distribute the appropriate material for the flood victims and effectively treats the unfavorable conditions. In real time application, it can be implemented using Virtual Reality, Holographic images and by using the LASER beam we can cover a large area and make the situation a desirable one.

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