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Dynamic Vision Sensor Based High Efficient Device Control System

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ABSTRACT : In this paper, we are going to use one dimensional hologram technology to control specific devices. Hologram is a physical structure that diffracts light into image and the hologram refers both encoded material and resulting image. A holographic image can be seen by looking into an illuminated holographic print or by shining a laser through a hologram and projecting the image onto a screen. Holography is the science and practice of making holograms. Typically, a hologram is a photographic recording of a light field, rather than of an image formed by a lens, and it is used to display one dimensional image of the holograph subject, which is seen without the aid of Dynamic vision sensor (DVS) detects temporal contrast of brightness and has the fastest response time compared to conventional frame-based sensors which detect static brightness per every frame. In this paper, a design of proximity sensing utilizing DVS is proposed. It can estimate the distance from DVS to an object by analyzing the spatial information of the reflection of additional light source. It also uses a pattern recognition based on time domain analysis of the reflection during turning on of the light source to avoid wrong proximity detection by noises such as other light sources and motions.

I. GENERAL DESCRIPTION

The concepts behind virtual reality are based upon theories about a long held human desire to escape the boundaries of the 'real world' by embracing cyberspace. Once there we can interact with this virtual environment in a more naturalistic manner which will generate new forms of human-machine interaction (HMI). The aim is to move beyond standard forms of interaction such as the keyboard and mouse which most people work with on a daily basis. This is seen as an unnatural way of working which forces people to adapt to the demands of the technology rather than the other way around. But a virtual environment does the opposite. It allows someone to fully immerse themselves in a highly visual world which they explore by means of their senses. This natural form of interaction within this world often results in new forms of communication and understanding.

HARDWARE REQUIREMENTS

- LIGHT SOURCE
- 1 D HOLOGRAM PROJECTOR
- DVS
- UART
- AT89S52
- Electronic Switch
- Pattern Matching Section

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SOFTWARE REQUIREMENTS
KEIL CROSS COMPILER
EMBEDDED C

ZIGBEE

ZigBee and IEEE 802.15.4 are standards-based protocols that provide the network infrastructure required for wireless sensor network applications. 802.15.4 defines the physical and MAC layers, and ZigBee defines the network and application layers.

For sensor network applications, key design requirements revolve around long battery life, low cost, small footprint, and mesh networking to support communication between large numbers of devices in an interoperable and multi-application environment.

ZIGBEE DEVICE OBJECT (ZDO)

Defines the role of a device within the network (coordinator, router or end device), initiates and/or responds to binding and discovery requests, and establishes a secure relationship between network devices. It also provides a rich set of management commands defined in the ZigBee Device Profile (used in ZigBee commissioning). The ZDO is always endpoint zero.

ZDO MANAGEMENT PLACE

Facilitates communication between the APS and NWK layers with the ZDO. Allows the ZDO to deal with requests from applications for network access and security using ZDP (ZigBee Device Profile) messages.

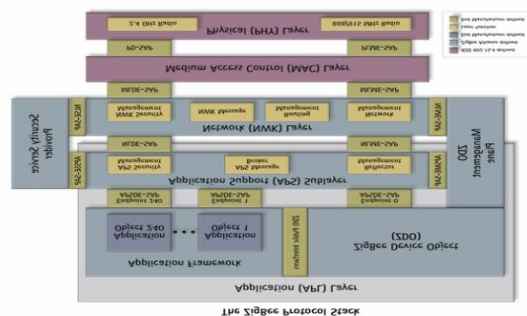
II. WORKING

Transformer:

Usually, DC voltages are required to operate various electronic equipment and these voltages are 5V, 9V or 12V. But these voltages cannot be obtained directly. Thus the a.c input available at the mains supply i.e., 230V is to be brought down to the required voltage level. This is done by a transformer. Thus, a step down transformer is employed to decrease the voltage to a required level.

RECTIFIER

The output from the transformer is fed to the rectifier. It converts A.C. into pulsating D.C. The rectifier may be a half



wave or a full wave rectifier. In this project, a bridge rectifier is used because of its merits like good stability and full wave rectification. The Bridge rectifier is a circuit, which converts an ac voltage to dc voltage using both half cycles of the input ac voltage. The Bridge rectifier circuit is shown in the figure. The circuit has four diodes connected to form a bridge. The ac input voltage is applied to the diagonally opposite ends of the bridge.

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III. CONCLUSION

Using Virtual Reality which consists of Virtual reality sensing unit, camera, Zigbee Microcontroller and relays. The touch made is identified using virtual reality sensing system and the devices are powered on or off based on the user's action. As Automation is becoming the trend nowadays, automating the home appliances using remote controls has limitations with respect to distance. Home automation using virtual reality helps in accessing the devices from anywhere around if the frequency of Zigbee is increased. We evaluated the accuracy and response of our system, these evaluation shows that virtual reality is suitable for practical applications.

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