Overview

3D LED cube is a low cost and Full-3D display system by using LED arrays (8 × 8 × 8) to construct three dimensional structure for displaying full 3D objects. With a touch panel and computer as the input, the displayed 3D objects are controllable. The LED cube can be applied in both advertisements and teaching purpose.

Aims and Objectives

The aim of this project is to design a low cost Full 3D display. User will be able to control and create 3D objects within the cube. This function guarantee a clear understanding of 3D objects to viewers.

Objectives:

• Develop an interactive display for users
• Display series of animations and controllable objects or words
• Take advantage of algorithm to map the LEDs

Methodology

This system is using 64 LEDs as a layer and combining 8 layers to form a cube. A Control driver and a layer selector are used to control the 64 LEDs and layer respectively. After data processing, pattern of the image will map on LED cube according to their coordinates to construct a 3D object. Users can use the Arduino build-in function, serial monitor to input their words. Using a touch panel to detect motion from user’s touch and control the ON/OFF of LEDs. Users able to save, clear, recall or even move and rotate the object.

Conclusion

The LED cube applied an algorithm to control every LEDs. With the transparent structure, the 3D LED cube is able to build full three dimensional objects. Through a drawing board function, users can create their own 3D objects. Also it can be tested by a PC. The final outcome may be able to attract eyeballs. In this project, there are five different actions which can interact with user and apply to advertisements and teaching purposes.

Although this 3D display includes the advantages comparing with some current 2D display technology, this display can be improved by some suggestions

• Increase the resolution
• Increase the transparent effect
• Use color (RGB) LED