Development of 3D LED Globe

Molnar, Ervin

Scientists around the world for years have been struggling with the challenge of creating holograms or realistic 3D images. I am suggesting an alternative way to create realistic 3D images with optical presence. The proposed device consists of six rings of different diameter, which are nested and fixed on one shaft. The rings are shifted by a 30? angle one related to another. The shaft with all rings brought to rotation by a brushless motor. There are LEDs fixed on the edge of each ring. LEDs are connected to multiple shift registers and are manipulated by AVR microcontroller via SPI interface. While the shaft with rings rotates, the LEDs are turned on and off in a certain order and at certain times thus forming a stable image due to persistence of human vision. The rings have different diameter, which allows adding depth to the image and displaying 3D models. Using different LEDs it is possible to display colored images. The entire system rotates with a frequency of 60 Hz. Also I have developed the software using C++ and C# that can decode any 2D image or 3D object model into a format that a microcontroller would visualize. The software send info to microcontroller via wireless network, which allows continuously changing images, manipulating them in real time or even displaying animations or videos. The display resolution is relatively high and the resulted image is sharp, clear and bright. Proposed device is low-cost, portable and lightweight. It can open new perspectives in many aspects of everyday life and be used in advertising, education, design, architecture, etc.

Awards Won: