

Wireless PoV LED Sphere - User Manual

Kevin Yeap, Steven Morad, Connie Yu, Reid Anetsberger, David Leroy Futscher



Contents

Table of Contents	1
Introduction	2
Hardware Setup	3
Bluetooth Setup	4
Operating the Blinky Lights Software	5
a. Drawing on the Canvas	6
b. Displaying Text	8

Introduction

WARNING: This product is extremely dangerous. Failure to keep your body and other objects clear from moving parts during operation could result in severe injury or death. Keep out of reach of children. If you accidentally swallow hardware, seek professional help and contact a poison control center immediately.

The purpose of this product is to create a transparent spherical LED display that can be programmed wirelessly from your computer. Applications include signage, lighting and entertainment.

”Persistence of Vision” (or PoV for short) is the theory where an afterimage is thought to persist for approximately one twenty-fifth of a second on the retina. A PoV display utilizes motion and precise timing to trick the brain into perceiving a static image where there is none.

The PoV LED Sphere is equipped with 34 RGB LEDs. In operation, all of the 34 LEDs are refreshed once every 3 degrees of rotation, or 120 times in one cycle, hence the effective resolution of the PoV LED Sphere is 34x120 pixels. The LED Sphere hardware spins at 1,800 RPM (or 30 rotations per second) and refreshes at 3600 frames per second to achieve persistence of vision.

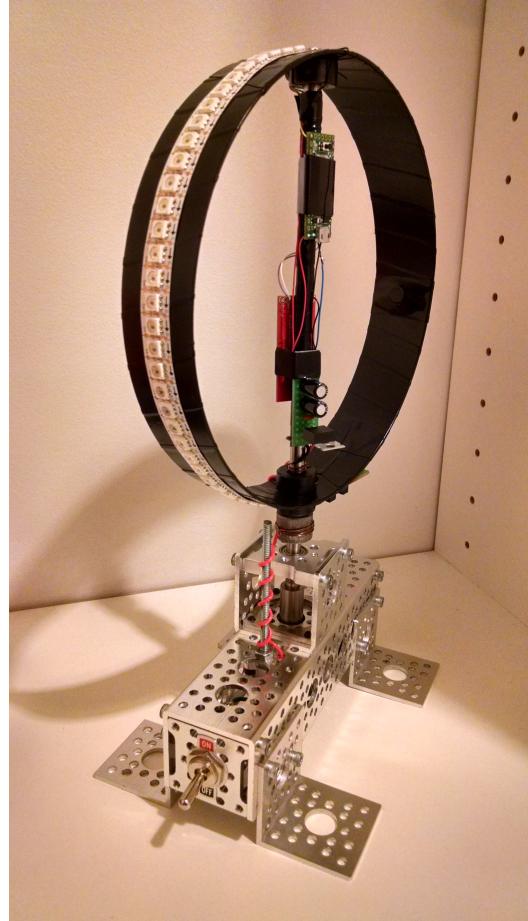


Figure 1: The ring of LEDs rotates at 30Hz, appearing as a sphere

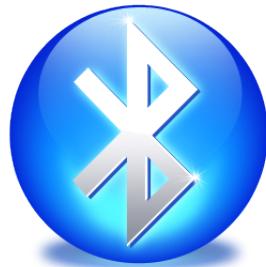
Hardware Setup



Figure 2: Left: power plug, Right: ON/OFF switch

1. Make sure no objects are obstructing the path of the LED strip. When the hardware is running the LED ring will be rotating at high speeds. Ensure that your hands, body and any objects are well clear of the LED ring.
 2. Plug in the AC power adapter into a wall socket and the other end into the hardware.
 3. Turn on the hardware by flipping the power switch to the ON position.
- WARNING:** Hardware accelerates immediately after power is turned on.

Bluetooth Setup:



If this is your first time using the PoV LED Sphere, you must first pair your computer's bluetooth with the LED Sphere. Once you have paired your computer with the LED Sphere, the Blinky Lights software will connect to the hardware automatically.

1. Turn on Bluetooth on your computer and scan for pairable devices.
2. Select the device named "LED Sphere", and click "pair."
3. You will be prompted for a PIN Code. Enter "0000" and continue.
4. That's it! Your computer should automatically connect to the PoV LED Sphere when the Blinky Lights software is running.

Once your pc is paired with the PoV LED Sphere hardware, execute the Blinky Lights software to begin using the display.

Operating the Blinky Lights Software:



Software: You should be greeted with the following GUI. Each GUI element is labeled, see the corresponding number for a full explanation of its functionality.

1. Click on a color to change the color of the brush. The color black is the eraser.
2. Click on an arrow to change the rotation of the globe canvas. Left arrow to rotate left. Right arrow to rotate right. Once an arrow is clicked the globe canvas will continuously rotate forever until the X button is pressed. The X button stops the globe canvas from rotating.
3. For displaying text on the globe please see subsection b for more details. *The globe canvas can only hold about 20 characters (including spaces)*
4. Pressing the "clear" button sets all the LED pixels on the current layers to black. It clears all colors from the current layer.
5. Pressing the "Upload" button will upload the current pattern on the globe canvas and display it on the hardware.
6. This is the globe canvas. This will be the canvas you will draw your patterns on. Please see subsection a for more details.

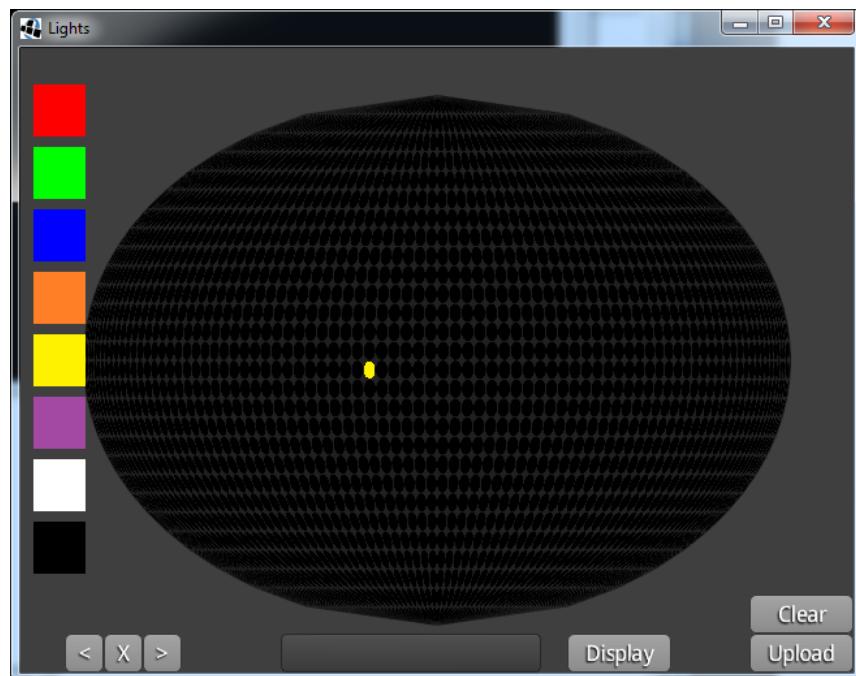
Operating the Software (cont.)

a. Drawing on the Canvas:

1. Select a color to draw with by left-clicking a colored box off to the left. (Tutorial will use yellow)

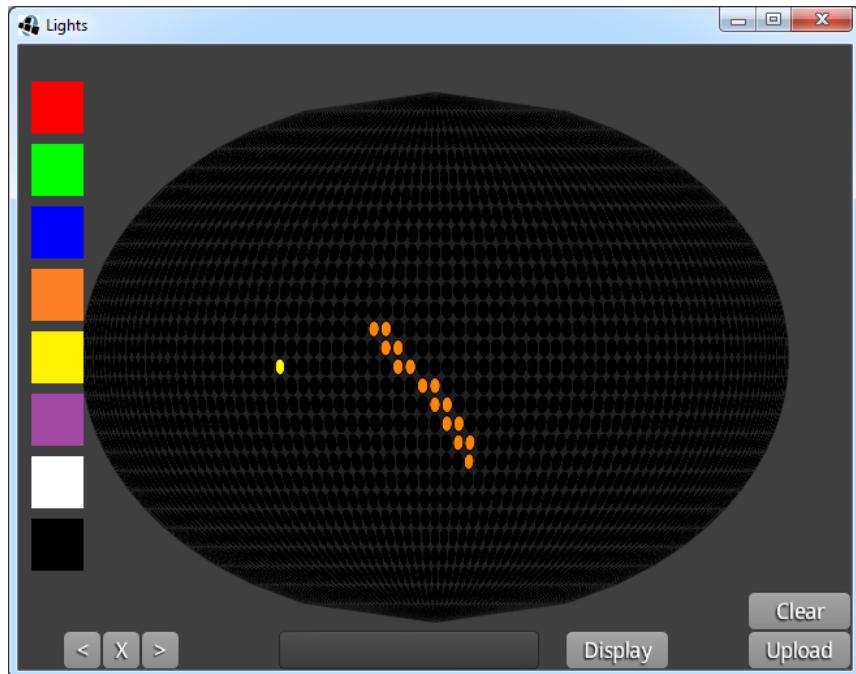


2. Left-click with your mouse on the globe canvas to fill in a "pixel". (chosen color was yellow for this example)



Operating the Software (cont.)

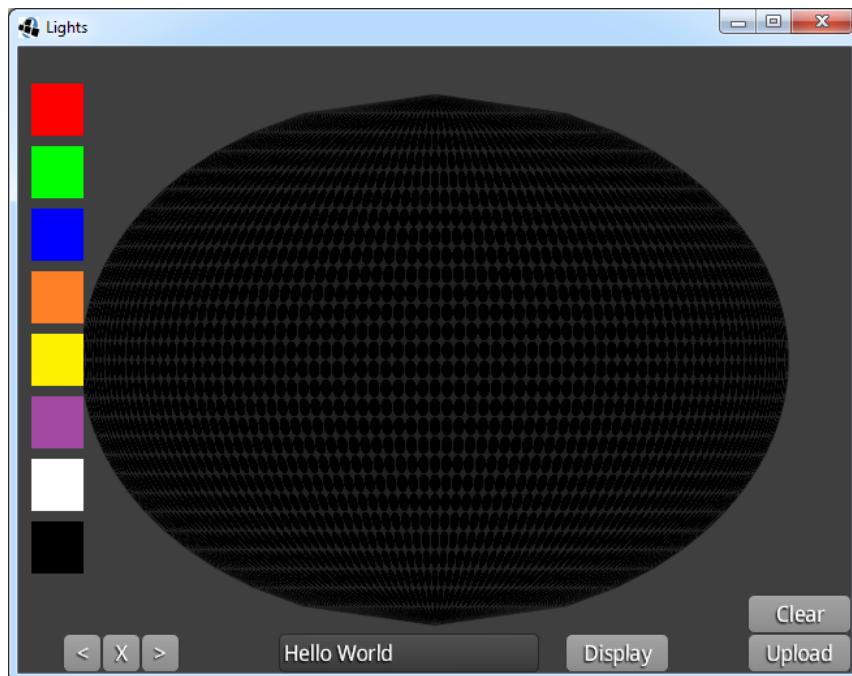
3. pressing and holding the left mouse button allows you to drag your mouse over the canvas to fill in pixels that your mouse passes over. (chosen color was orange for this example)



Operating the Software (cont.)

b. Displaying Text:

1. Type the characters that you want to display into the textbox.



2. Click on the "Display" button to push the text onto the globe canvas.

