

Project Ariana

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Abstract

Ariana is a color sensing tool which can be used along with Adobe Mighty and other similar digital tools. It is aimed at artists by allowing them to pick up colors from physical objects from their surrounding and using those color in their creations. Ariana is a small compact color sensor that can be integrated with Mighty.

Ariana is able to pick up individual colors and provide the corresponding hexadecimal value, which can be transmitted to apps like Adobe **Photoshop**, Adobe **Ideas**, Adobe **Illustrator**, Adobe **Revel** and other similar tools.

This can be integrated with Adobe photo editing and illustration software with minimal support and is very natural to use. Ariana can thus help the artist to take color inspiration from the real world and then use them to create digital art.

Background

Visual artists are in constant look for inspirations. They explore a lot of things like colors, shapes and effects in their day-to-day surrounding and use this as an inspiration to create their work of art. They put a lot of effort to make their work as real as possible. It is thus important to make the colors in their work to be as close to reality as possible. In this paper we try to explore a novel approach to improve this process. We are also trying to make this process hassle free and more intuitive so that selecting colors becomes an inspiring creative process as it's meant to be.

The existing solutions

1. Nix Color Sensor[1]

The Nix is a small gem-shaped device with its own calibrated light source. When you press it to a surface, it blocks out all external light to get a reading on what color the object is. It only takes a few seconds from the moment the

button is pressed in the app to the identification of the color. The Nix app will support saving colors with notes for referring to later, but it also tells you where you can find the colors in real life. The app also shows where you can find the selected color.

However, it is a separate hardware that only sends color to the app. It is also priced at \$199

2. Colortron

It is a handheld device especially used by fashion designers that can pick up any color in the physical world and return the numeric value of the color so that the designer can have the color number to work with in their design software. Colortron is accurate in computing the colors but it is a bit bulky and it is not designed as a tool to draw with, so the designers must work with separate tools for drawing/sketching their designs

3. Digitizing

An old school way to get the desired color involves a number of steps to get to the desired color. It involves clicking a picture or scanning the object of the desired color, then transferring the image to computer and using a image editing software like Photoshop to actually figure out the color which most of the times is not only inaccurate but also hampers the creativity of an artist deeply involved in his work.

The proposed solution

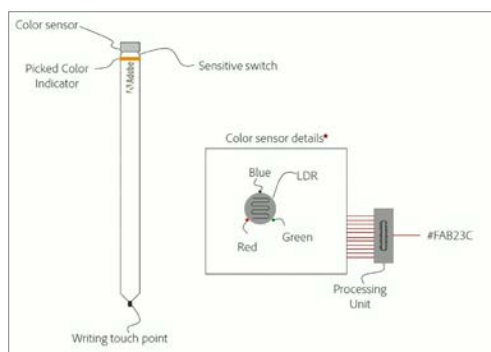
Colors have always been inspired from nature. An artist looks at his surrounding for inspirations. Keeping this in mind we have designed is a tool that can be used to pick up color from these physical objects in our surrounding. These colors can then be used in the digital creation with the help of Mighty or similar drawing tools. The motivation is to provide a seamless experience, which

makes this inspired creative process as hassle free as possible.

Implementation

The Color sensor consists of light sources, sensor and the processing unit. The processing unit computes the hexadecimal value of the sensed color and feeds it to the program, which is then used along with the writing touch point to create art with the selected color.

When the sensor touches the surface, additional lights are shone on the surface of different wavelengths and the sensor senses these. Based on the inputs from all the different lights the processing unit generates appropriate hexadecimal representation of the color. Once the color is captured, it will be visible on the pen in the picked color indicator (optional), which can then be used in the current drawing program and the hence can be used accordingly.



Current Prototype

The current prototype implements a very minimalistic approach. LEDs (Light Emitting Diodes) of three different colors, Red, Green and Blue are used as the light source. An LDR (Light Detecting Resistor) is used as the sensor and a teensy board is used to control the LEDs and read the inputs. Each of the three LEDs is turned on sequentially for a period of 1 second. The input on the LDR is read individually for each of these lights. We collect multiple samples for a better accuracy. Once these values are read, they are

normalized based on predefined calibration and then the values are converted to Hex for use within the application. This value is then returned to the user.

Cost Involved (Bill of Materials)

Item	Cost
LDR	\$ 1.0
LEDs	\$ 0.8
Switch	\$0.5
Teensy 3.0	\$ 19.0

Bill of materials is about \$ 21.3; of course, once this system is integrated with Mighty's on board processing system, we could bring down the BOM to about **\$2.3 (about two US Dollars)** .

Future

The current system offers an accurate reading of the color with tolerance of $\pm 3\%$, with minimal calibrations.

1. We can improve the current system to lower error by using improved calibration techniques.
2. Identify potential accuracy improvement by using a white light along with the specific wavelength light sources.
3. Use CMOS sensors, which possibly could improve the accuracy of the colors depicted.

Conclusion

We believe that our sensor tool can help improve the workflow of digital artists by providing them with a simple and easy to use real life color picker tool and can add immense value to digital tools like Project Mighty.

References

- [1] <http://technabob.com/blog/2013/09/17/nix-color-sensor/>