Color Sensing Infinity Mirror
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ECE 411

ECE 411 Practicum Proposal

Concept:

Portable device that outputs light and sound corresponding to a detected color.

Summary:

LED art is popular and marketable, with interesting pieces going for hundreds of dollars. Our project decision was made with the intention to explore this attractive market. The design for the device is a tabletop infinity mirror that will interact with an object placed on the mirror.

The project will result in a device that is capable of sensing color. Based on the input, a microcontroller will adjust the output of a digital RGB LED array to match the detected color. It will also output a generated audio tone corresponding to the input. The device will be powered from a wall outlet and may also be powered by rechargeable batteries.

Hardware Summary:

- Atmel AVR ATMega328
- RGB Color Sensor, TCS34725
- Digital LED Pixel Strand
- PWM Controlled Audio via LM386 (or similar) op-amp and small speaker
- Power Management IC
- Possible Li-Ion Battery, x2 Cells

Software Summary:

- I2C driver for interfacing the TCS34725 color sensor with the microcontroller
- SPI-like driver for the digital RGB LED strip

Practicum Requirements:

- The device will have an input (color sensor)
- The device will use a digital microcontroller that will be programmed from bare metal
- The device will have a minimum of one output (light and sound)
- The device will be safe