Illuminations Seminar Final Project

Light Alarm

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MIT ILLUMINATIONS

The pictures show the light in different states. The top left picture is when the alarm is inactive; a generic rainbow is displayed. When the alarm is active but not ringing, the lights are as shown in the top right. The bottom left picture shows the light alarm at 30 minutes after the beginning of an hour, while the bottom right is at the hour mark.

QR code for the source code.

As people come visit MIT, what they might have a chance to see are the lights in the MIT welcome center. The “Full Spectrum” of rainbow colors should fascinate whoever comes across it the first time at least a little. As beautiful as the lights are, however, most people may consider them just for aesthetics—”cute blinky lights,” one might say. The question afterwards is how the lights can be implemented to have practical purposes. In MIT’s brand-new first-year class Illuminations Seminar (6.A01), students are introduced to creative coding and electronics with lights as the theme. The class culminated in the final project in which students program their own projects to function with these lights. Together with my colleague Luis Turino, we have created “Light Alarm,” the program that turns the lights at MIT welcome center into a clock behaving according to so-called “MIT time.”

As we try to come up with ideas, we stumbled upon the problem that regardless of what idea we put through the lights, the output is only a bunch of lights in a single row. We were therefore aiming to express data that can be easily interpreted by only seeing a row of lights. We eventually arrived at the idea of using lights to tell students to go to classes; as a freshman, I have to embarrassingly admit I have been late to classes due to losing track of time too many times. By making lights that get more frantic as the hour mark arrives, perhaps I can help some people not be late for class.

The technicalities behind this project are fairly simple. The code is mainly based on the moving rainbow template normally shown in the welcome center as it provides smooth flowing light transition. The main idea is that while the lights are flowing similar to the rainbow, the colors and speed of the lights are altered in order to convey the “busyness” of the current time. To illustrate, when there is nothing going on (e.g. 2:15pm), the lights will simply be in a peaceful cyan color. However, when it is the time to change classes (according to MIT time), the lights will start changing color and rotate faster in order to indicate that it is probably time to get ready. In the smaller event of 30 minutes since the beginning of the hour, the lights stay yellow; on the other hand, at the end of the hour, the lights go even faster and become red. To prevent the lights from staying monotonous, a periodic offset is implemented so that the color of the lights vary around a central color representing the mood at the time. When the working hours at MIT are over (including weekends), the lights gradually transition to the default rainbow we all love, making this light show functional 24/7.