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15-112 Term Project

Design Document

My project is a smart mirror that is “smart” in that it can connect to the internet and pull information from web APIs, and also respond to voice commands using natural language processing. The overall ideal behind the project was to find a way to integrate technology subtly but usefully into your daily life, in a form factor that would not be very noticeable, or overly “techy”. This was tackled on multiple fronts, from the minimalist interface design and sans-serif font choice, to the actual hardware of the mirror itself, which uses a two way mirror to hide the fact that the display even exists until it is required. The use of OpenCV to detect when someone is looking at the mirror also reflects this design goal, keeping the display of the mirror off and out of sight when it is not needed (when there are no people around).

All the modules used in the project were implemented in an effort to move towards this goal. The PyOWM weather API pulls weather data that then be displayed on the mirror when asked for by the user, the Google Calendar API pulls calendar data from the user’s calendars that can also be displayed by the user, and the reminders function is small but available to the user at a quick glance. The use of NLTK was important, so that the user would not need to memorize specific functions, but rather could use a number of different phrases in a more natural sense. This makes the actual use of the mirror more subtle and natural, and as a result, less “techy”.

A lot of the designs I saw in other mirrors inspired my design, using minimalist fonts and a modular design to keep the interface simple and relevant to the user.

On the hardware front, since I built everything myself, I had complete flexibility over the exterior design of the final product as well. I opted for a clean white frame, hiding all the display driver wires behind the mirror.