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COMPEMEC - 462

<center>It's Too Early!</center>

Project:

Current Progress:

At this time the arduino board is being used as the base unit for the system. It is currently responsible for, capable of, the following actions: receive remote instructions/values from a remote control and/or the Raspberry Pi unit, gather the average ambient light level from outside the testing room, determine the actions required based on the instruction/gather value, and manipulate the attached motor based on the actions needed.

In order for the arduino to receive remote instructions, two modules are being used: an IR remote receiver, and an nRF24L01. The IR receiver is paired with an IR remote that can currently set the system into either automatic or manual modes. When in manual mode the remote can be used to tell the system to open or close the curtains, based on the current state of the system, we don't want the curtains to close when they already are. Automatic mode, the default mode of the system, uses the nRF24L01 module to receive updated threshold values from the Raspberry Pi.

The Arduino currently has five photoresistors connected to it, three responsible for gathering the external light level, with the last two used as switches to determine when the curtain is fully open or fully closed. The Arduino averages the values gathered by the external resistors so that small anomalies outside the window will not trigger actions prematurely.

Issues:

At this time I am encountering two issues that I consider significant. First, the current system uses an Arduino Uno as an intermediary between the Raspberry Pi and

the main Arduino board to facilitate wireless communication. When attempting to connect the Raspberry Pi to the nRF24L01 chip, the Arduino receives junk data. I am thinking it may be an issue within the library I am using for the RPi, but more experimentation is needed.

Second, as previously communicated I am experiencing an issue with the torque of the motors I have on hand not being able to overcome the weight of the curtains and the pulley system. While I have received an OK to implement a proof-of-concept version of the curtain system, I will continue with a few more attempts to do the complete version. There are two experiments I am wanting to attempt: using a more powerful stepper motor that is being loaned to me, and using two 9V batteries in parallel to double the current to the DC motor, working under the assumption that maybe the draw from the rest of the system is working against what the motor has access to.

Future Steps:

- Finish web-based interface for configurable threshold value
- Decide on model of curtain system, proof of concept vs full-scale
  - If full-scale, make a smoother pulley system so the draw line does not get tangled.

Deviations:

Beyond the required addition of an Arduino Uno for wireless communication, I have removed the preset timer functionality from the system, too many triggers competing against each other.