Automatic Window Opener

ECE153B Project Proposal
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Overview:
We plan to augment a sliding window by adding a stepper motor powered belt drive to open and close the window. The mechanical design for this project has been constructed, and currently works with minimal features. The purpose of this lab project is to add several peripherals to the automatic window opener, to improve the window movement and control
Temperature sensors will be placed on either side of the window, and allow for automatic tendency towards homeostasis. The current sensor will be hooked up to detect changes in resistance force to the window, to detect when the window is pushing against something. The desired result is to stop the window when it pushes against itself closed and avoid closing on hands or other objects in the windows path.

Peripherals:
  -Motor driver
  -Temperature sensors
  -IR Sensor and Remote
  -Current sensor

Software Design:
We plan to implement an FSM within a grand-loop. Specifically, we will have states for when the window is in motion and not in motion. The temperature sensors will be setup in polling mode when the window is not moving. The IR remote will be setup as an interrupt and will have the ability to start and stop window movement, as well as turn on and off automatic adjustment due to the difference in temperature. If implemented, the current sensor will also be setup as an interrupt with the highest precedence.

Goals:
  -The primary goals are implementing the motor driver, temperature sensing, and the IR sensor and remote.
  -The secondary goals given enough time will be implementing current sensing. Should that prove too difficult to implement in this time frame, a button will be placed inside the sill of the window to detect when the window closes.

Group Responsibilities:

David will be in charge of the infrared remote and the temperature sensors. Bryce will focus on driving the motor and current sensing aspect of the project.