Opposite Window Light Level Difference

Question to answer: What is the difference in light levels between two opposite-facing (North and South) rooms?

**Sensor:** Adafruit VEML7700 Lux Sensor - I2C Light Sensor

Experimental Methods:

- Set laptop and breadboard with lux sensor on windowsill (ensuring no shadows were cast on the sensor from either the sensor or the equipment)

- Uploaded the code and let the sensor gather data for 10 minutes

  - Integration time: 100 ms

  - Gain: 1/8

- The experiment was conducted at 12:19 pm and 12:34 pm for the North facing and South facing dorm rooms respectively
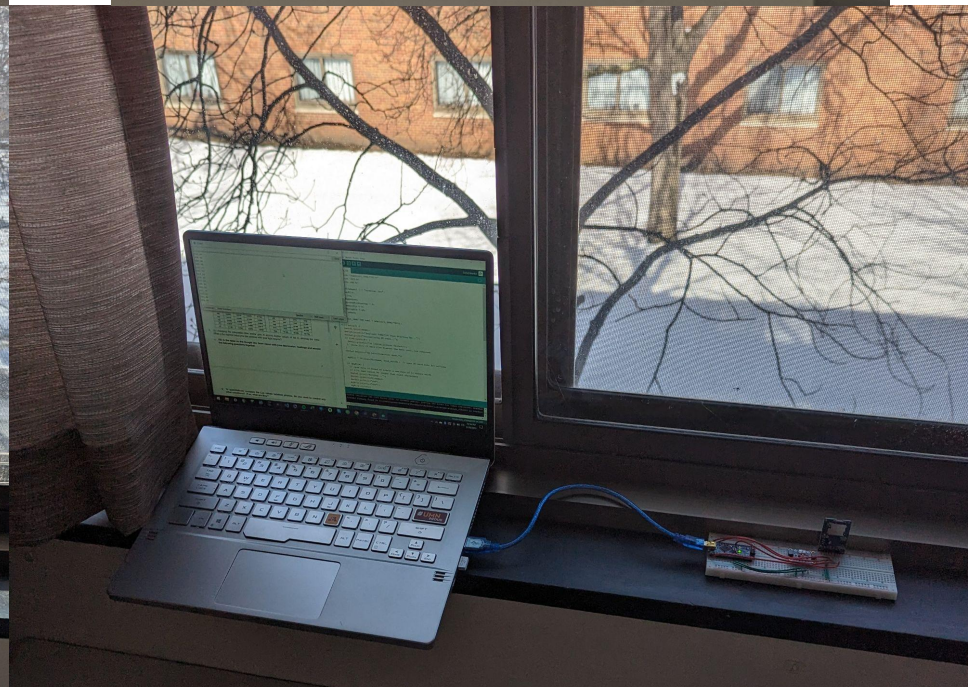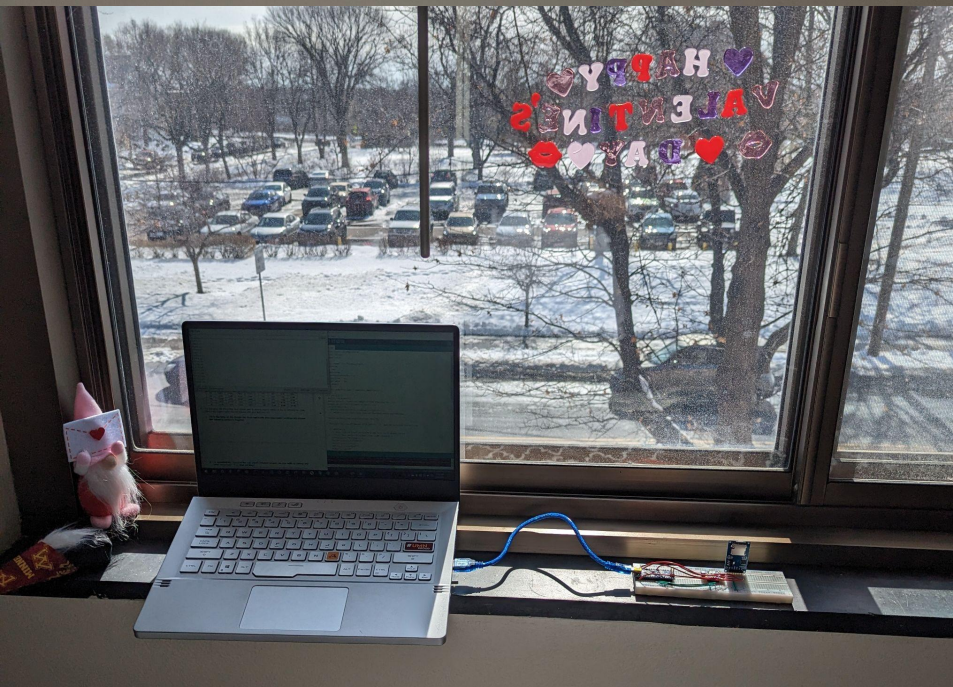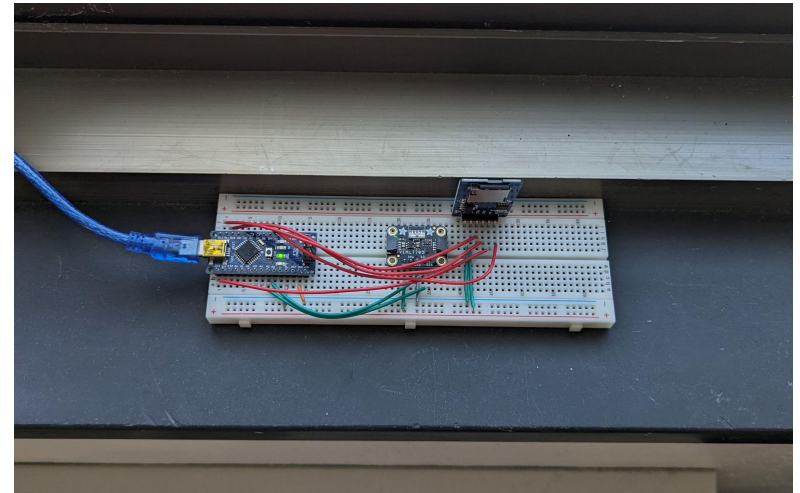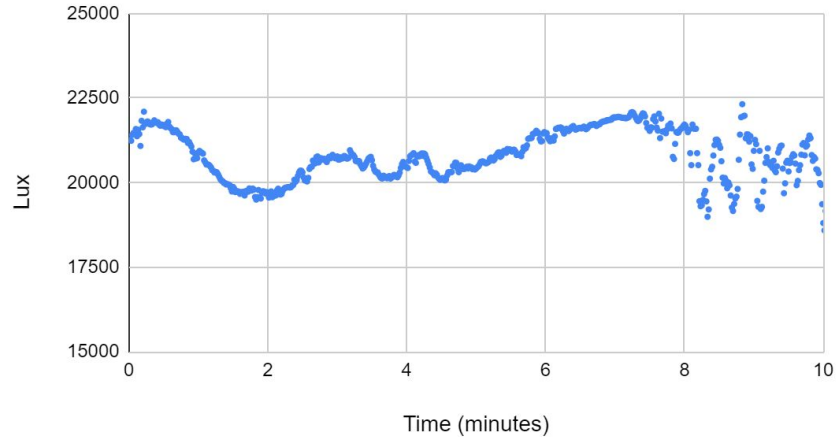
Set-up
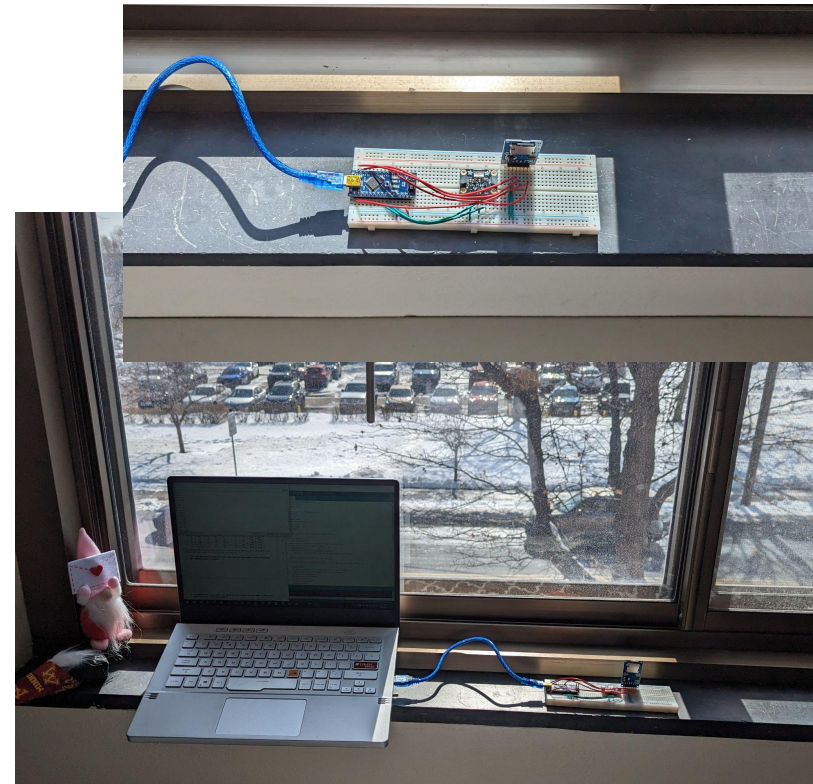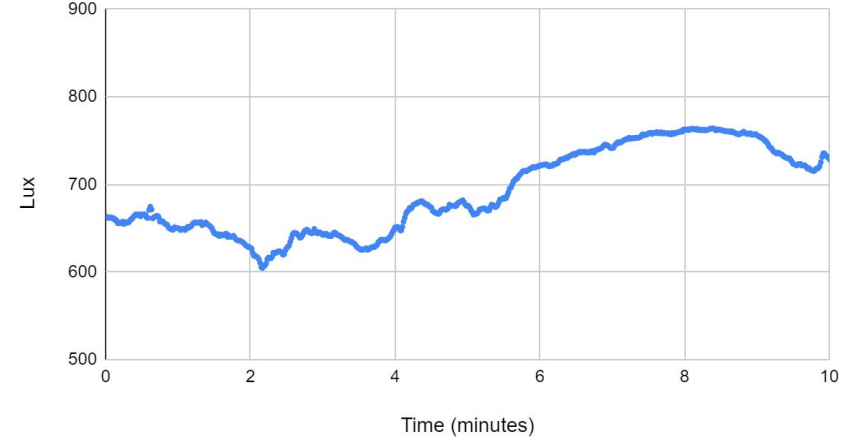
South facing:
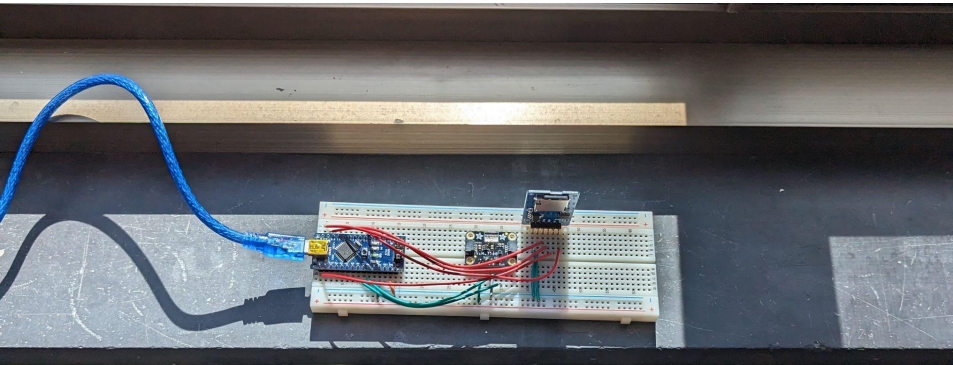
North facing:
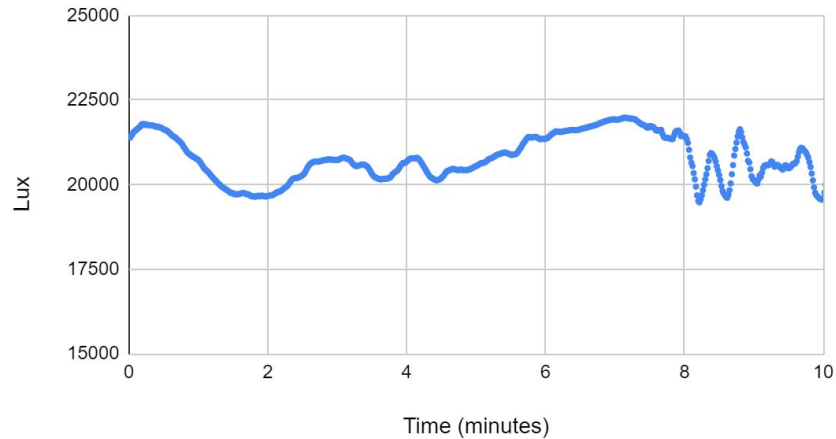
Results and Data Analysis

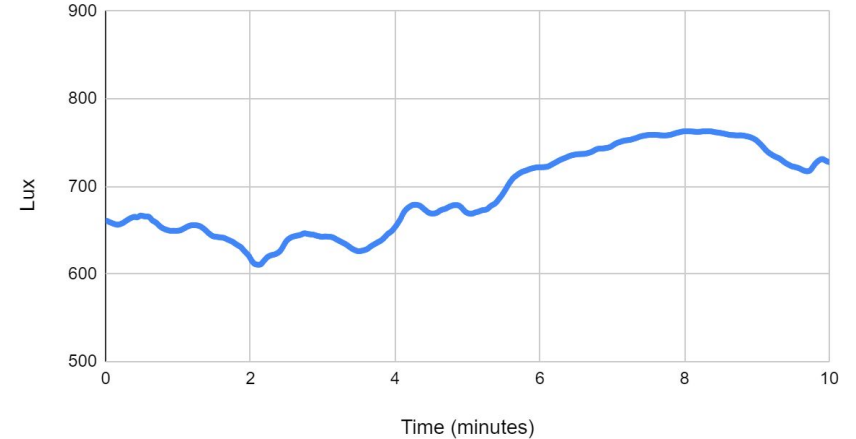**South Facing Window: Lux vs. Time**

North Facing Window: Lux vs. Time

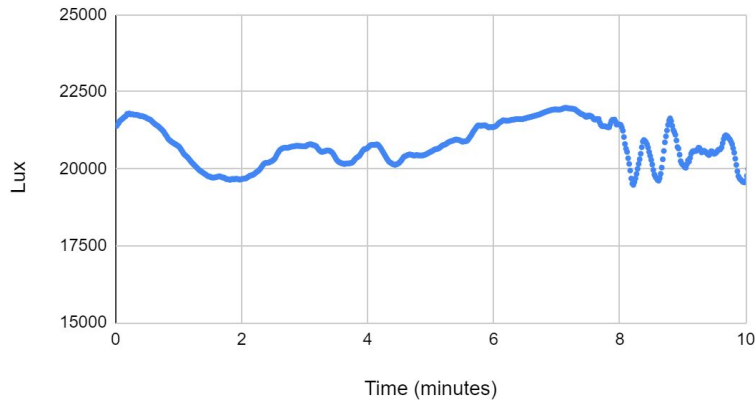**South Facing Window: Lux vs. Time 10 Second SMA**

North Facing Window: Lux vs. Time 10 Second SMA
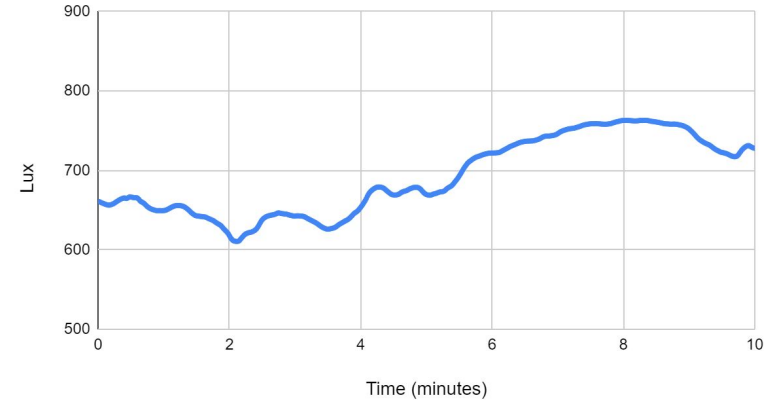

10 second SMA was used to clear some of the noise, especially seen in the South Facing Window graph
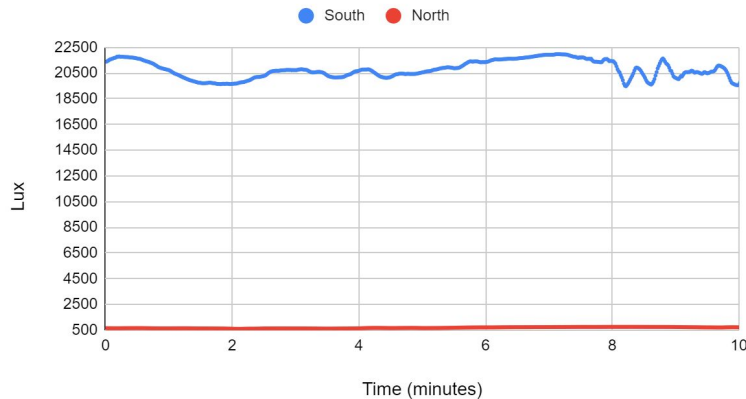
Results and Data Analysis

South Facing Window: Lux vs. Time 10 Second SMA

North Facing Window: Lux vs. Time 10 Second SMA

North Facing vs South Facing Window 10 Second SMAs

South facing window average: 20804.21
- Full daylight (not direct sun)

North facing window average: 691.44
- Sunrise or sunset on a clear day

Data points were taken every second, which was placed into Google Sheets and turned into graphs representing Lux vs. Time as raw data and with 10 second simple moving averages. Averages for the two datasets were taken using the Google Sheets average function, selecting all points within the 10 minute range of the two data sets respectively

Conclusion: The light level difference between two opposite facing windows (north and south) is drastic to the point of one imitating the sun setting/rising and the other receiving full daylight.