How Does the Color of Artificial Light Affect the Time It Takes for a Light-Sensing Robot to Trace the Light?

Patel, Dhruv

The purpose of this experiment is to test whether or not different colors of light change the time it takes for the robot to make a 180 degree rotation by following the light. The procedure for this experiment is to gather all materials, place the robot in a completely dark environment and on a flat surface, shine the light at the robot's photo resistors, use a stopwatch to measure how long it takes for the robot to make the rotation by following the light,record data,and repeat for each color. My results supported my hypothesis which was if different colors of artificial light are used on a light sensing robot,then the robot will rotate 180 degrees the fastest when exposed to the white artificial light. The white light made the robot travel the fastest at 2.25 seconds and gray light the slowest at 2.94 seconds.After my original experiment I performed a statistical Student's t test to see if my data had any significant difference.I used the data from white and gray for my test. For this test, I had to create a null hypothesis which was that if different colors of artificial light are used on a light sensing robot,then the robot will rotate 180 degrees the same time when exposed to all the colors of light. The p value from the t test that I ran was rounded to 1.08E-30 which meant that the probability of my null hypothesis being correct was less than 1 percent. This meant that more than 99% of the time there would be a significant difference between the white and gray colors that I tested on the robot. From all of these results, I concluded that the experiment supported my original/alternate hypothesis and rejected my null hypothesis.

Awards Won: