

CPE 301 1104 - Lab Report 7

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1 Abstract/Introduction

This lab taught us how to use the Arduino to convert analog data to digital data. Here, we collected analog data from a photoresistor on our breadboard, and sent the data over serial to our own machine.

2 Experimental Design

We used an Arduino Atmega 2560 connected to a computer with the Arduino IDE, and a photoresistor. The photoresistor was connected in series to a 220 ohm resistor as a voltage divider. Moreover, the photoresistor was connected to power and ground directly (See Figure 1 for this simple breadboard setup). We modified the Lab07 example code provided from the assignment by creating the show voltage function, which showed the voltage values in the serial monitor. Basically, the show voltage function called adc read, which returns the analog data read from the analog channel given as a parameter. This analog value is then converted it to a digital voltage, separated into digits, and then sent as characters through UART. We looked at the output on the serial plotter window as the level of light picked up by the photoresistor changed.

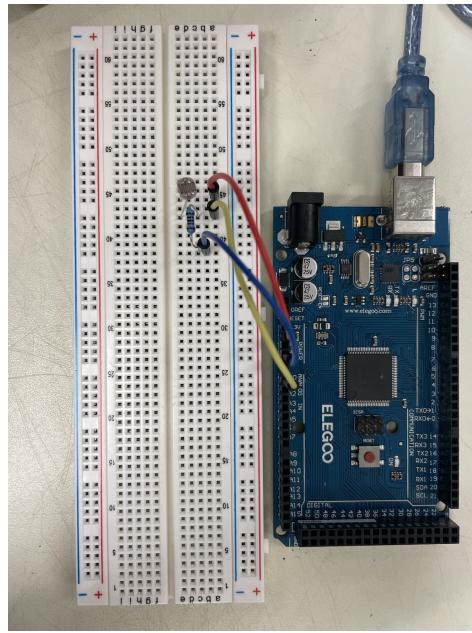


Figure 1: The setup of the Arduino and breadboard (including the photoresistor)

3 Results

When I touched the photoresistor, the level of light would decrease, and the values on the serial plotter would decrease in response. Altogether, the levels we picked up fell between 0 and 5.



Figure 2: The results of the digital to analog conversion, as seen in the serial plotter window (the lines are super faint, apologies). During this pictured time window, I placed a finger on top of the photoresistor and removed it several times. The y-axis is representative of the level of light, while the x-axis represents time.