Sensors and Motors Lab

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a. Individual progress

The equation of thermal and the degree of servo motor is listed as below:
The degree of servo motor= (Celsius temperature-15)*9
As tested in the lab, we can make the temperature change approximately between lowest temperatures 20º Celsius to highest temperatures 30º Celsius. Generally speaking, we will transfer it into 0 degree to 180 degree in servo motor. Eventually we set the output degree from 45 degree to 135 degree given that the temperature range could be exceed the range easily. It will be safer if we give it some ambiguous and flexible range.

b. Challenges

I. The heat damage problem

The heat could actually damage the circuit over 30 degree Celsius and the coverage of wire will start to melt at that degree. In fact, we burned the sonar sensor because we put it next to thermal sensor at the very first time.

II. Problems of circuit interfere when crossing with each other

Cross wires and tangle them with each other could cause serious signal interfering especially on sensors. Make sure separate them then the magnetic force wouldn't interfere the current.

III. Noise reduction

To eliminate the noise from sensor reading, we put a bypass capacitor next to the thermal sensor and a 100Ω resistor between the power supply and the thermal sensor. The bypass capacitor will suppress the power noise and the 100Ω resistor will divert some of the voltage from the thermal sensor.