Infrared Thermometer
(MLX90614)

PHYS 398 FA18
By Simon Hu, Charlie Xiao, Qier An
Overview

- Simple thermometer used for non-contact temperature measurement
- Able to measures temperature from -70°C to 380°C
- 0.02°C resolution, and ±0.5 °C accuracy around room temperature
How It Works

- Objects above 0°K radiates light, objects near room temperature radiates waves in the infrared region.
- The thermometer collects light signals and focus them onto thermopiles. The thermopile then produces voltage proportional to a local temperature difference.
How to Use it

- The thermometer has a cone shaped 90° field of view.
- The object being measured needs to be placed inside the thermometer’s field of view.
- Since its FOV is cone shaped, the sensing area gets increasingly wider as the distance increases.
- Also measures its own temperature (-40°C - 125°C measuring range), which can be used to further calibrate data.
Code support

https://github.com/adafruit/Adafruit-MLX90614-Library

- Code in C++
- Note that ambient temperature is the temperature of the sensor itself.
Wiring

- Connect GND to common power/data ground
- Connect PWR to the power supply
- Connect the SDA pin to the I2C data SDA pin on Arduino
- Connect the SCL pin to the I2C clock SCL pin on Arduino
Sources


https://www.adafruit.com/product/1748


https://en.wikipedia.org/wiki/Thermopile