

# Birfeeder

Smart way to feed birds

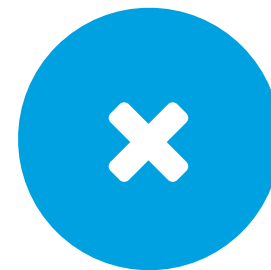


# Concept



## STATEMENT OF INTEREST

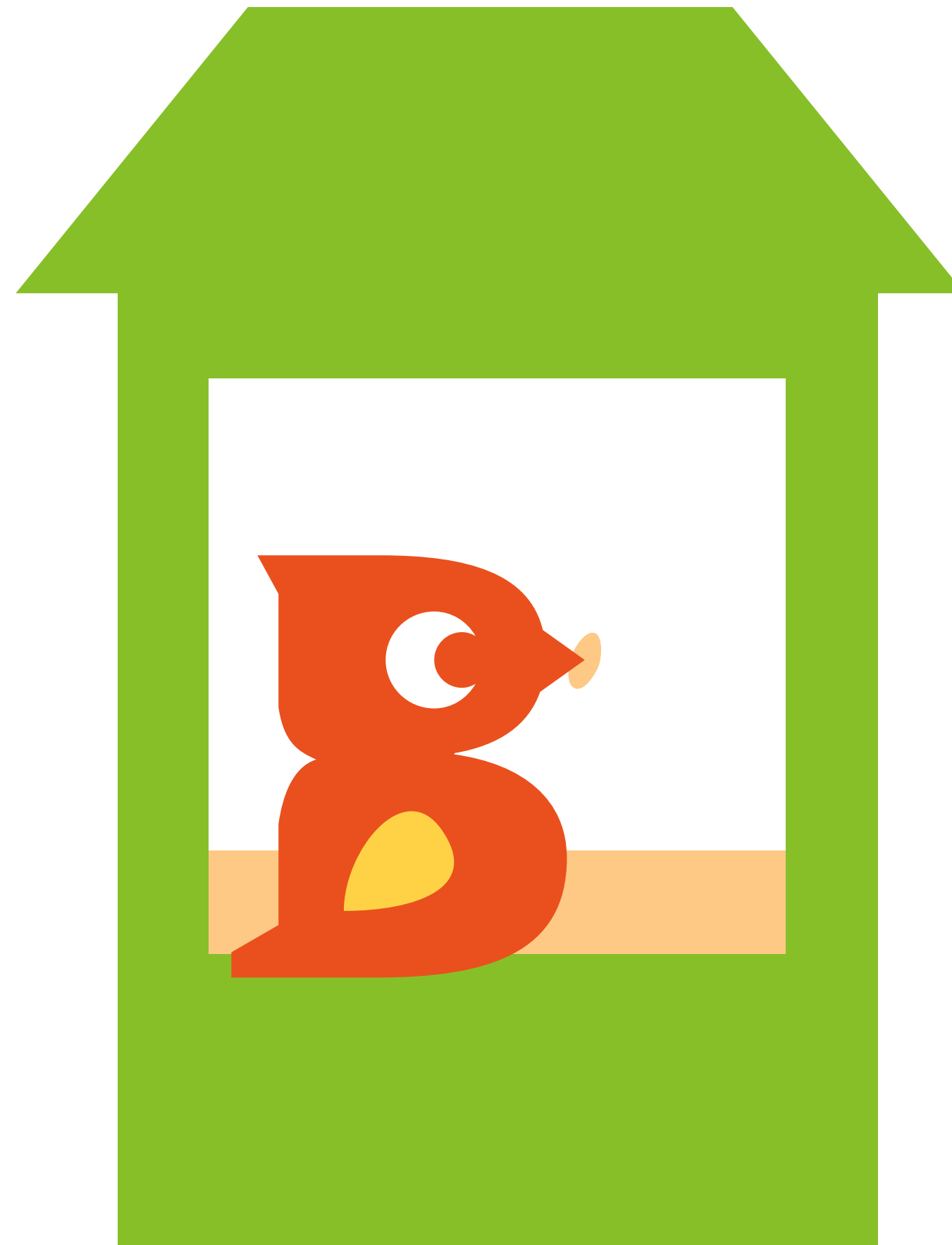
When I was a kid, my parents took me to woods and beaches watching wild birds during weekends. I enjoy using telescopes to observe colorful birds, the most beautiful and adorable creatures in the world.



## PROBLEM

Unfortunately, bird watching costs a lot of time for waiting and traveling around for searching, so not many people can enjoy this joy. The bird feeder is an easy and straightforward way for people to watch birds and enjoy this activity. But the traditional bird feeder has some issues might decrease beginner's enthusiasm such as other animal stealing seeds, long time waiting without any reward and missing visited birds during working hours.

# Solution



## BIRFEEDER

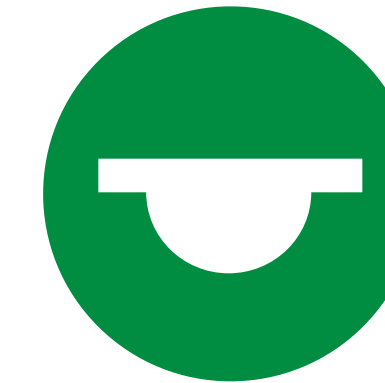
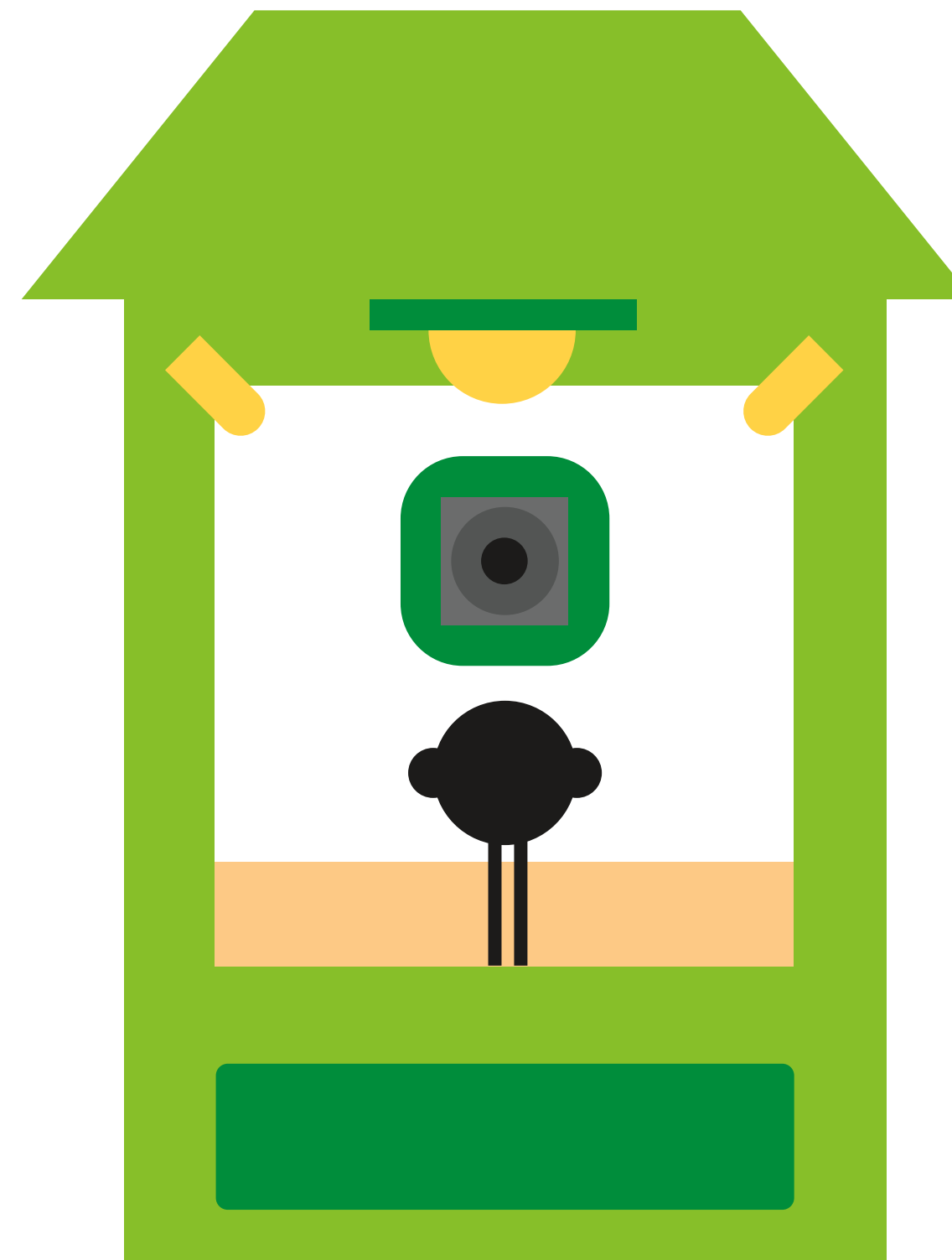
Birfeeder can solve that problem for beginners and let them dive into bird world effortless because of the motion sensor, the camera, and buzzer. The motion sensor can detect the live creature near the feeder, and the camera will take a picture and send the picture to client's phone, so the owner can see the photo then decide to expel squirrels and other rodents by buzzer or watch the birds in person. Even if the proprietor is not nearby, he can choose to record the video for later watching so that he will never miss up the moment that birds visit his Birfeeder.

# Inside Birfeeder

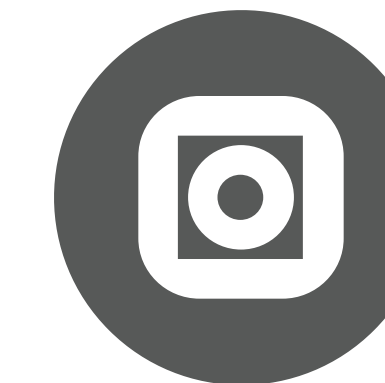
**LIGHT**  
Bright the inside



**NOISE**  
Expels animals



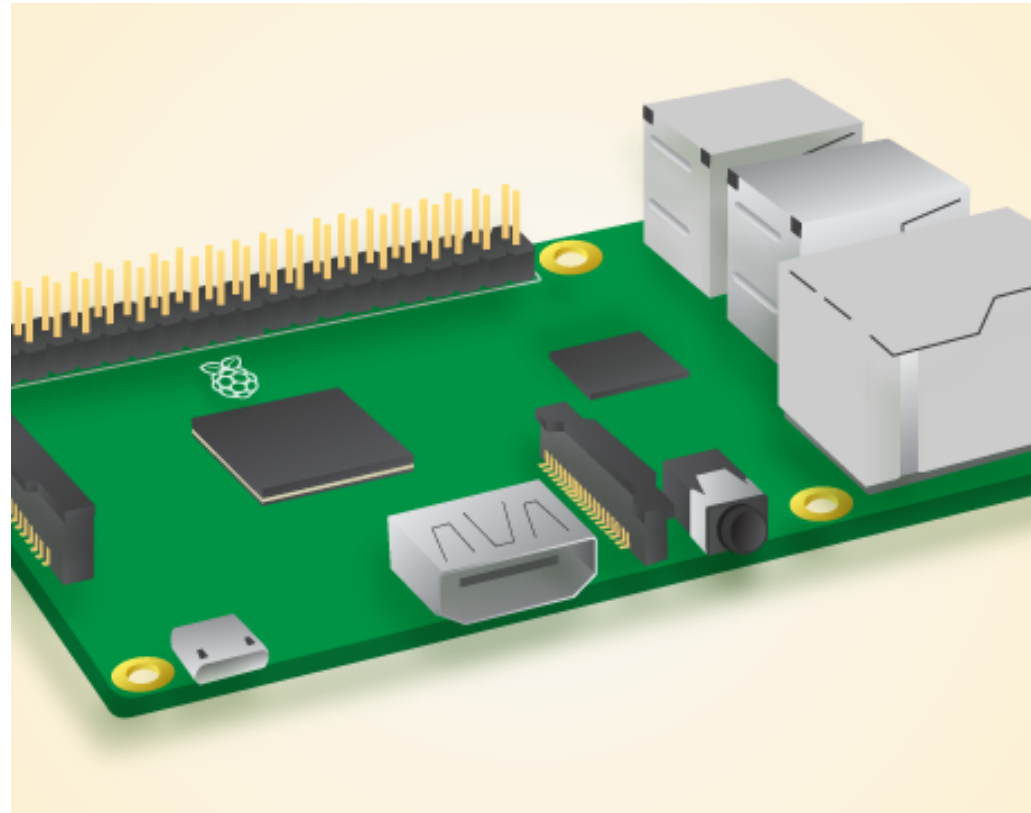
**SENSOR**  
Detect action



**CAMERA**  
Take a photo  
Record a video



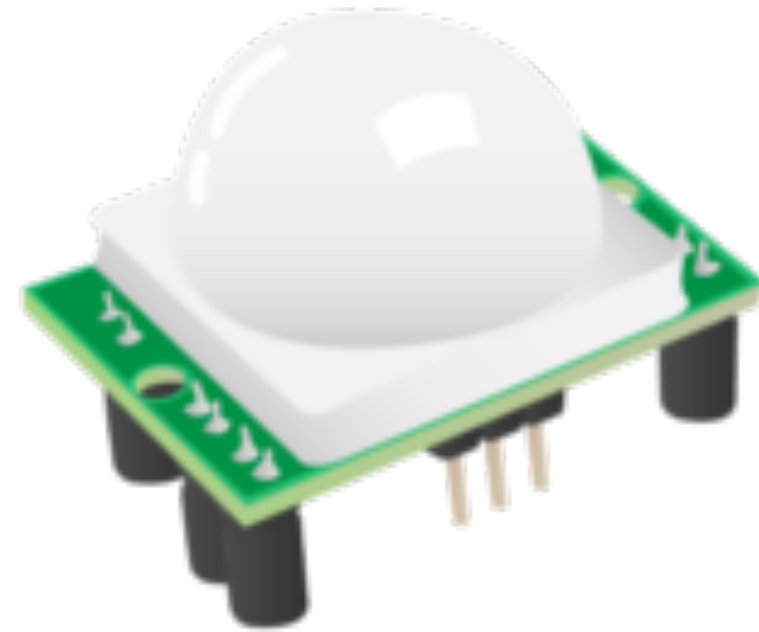
# Equipment



## Raspberry Pi

The next generation Quad Core Broadcom BCM2837 64-bit ARMv8 processor, making the processor speed increase up to 1.2GHz on the Pi 3.

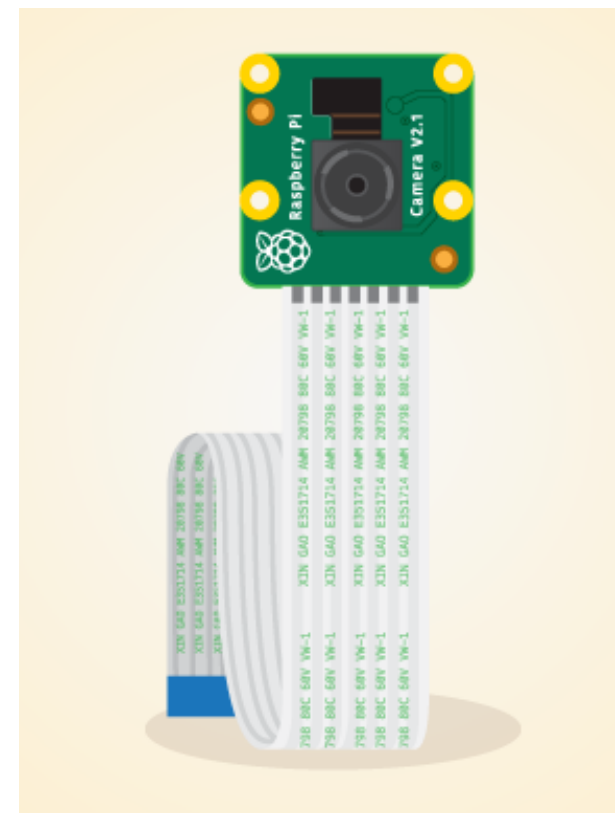
3.4" x 2.3" x 0.8"  
1.5oz



## PIR Sensor

PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range.

1.27" x 0.9" x 0.97"  
0.2oz



## Camera Board v2

It's capable of 3280 x 2464 pixel static images, and also supports 1080p30, 720p60, and 640x480p90 video.

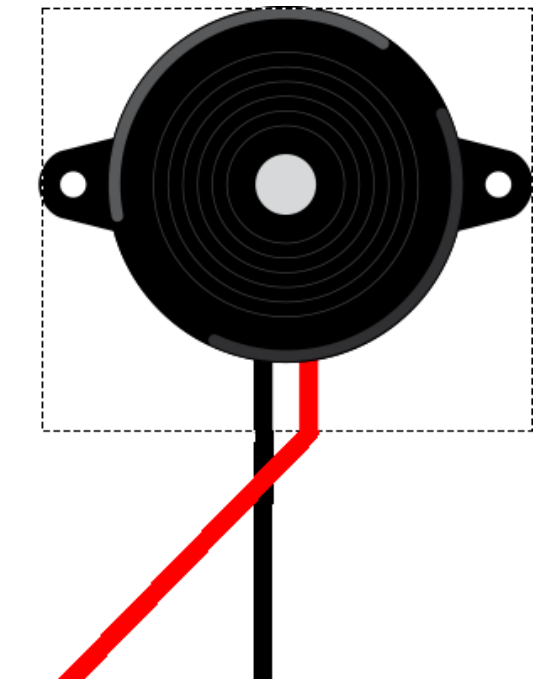
0.98" x 0.90" x 0.35"  
3.4g



## White LED

They are very bright and have about 25 degree LED beam so they're good for illumination, head lamps, spotlights, etc.

5mm diameter  
15,000 mcd



## Piezo Element

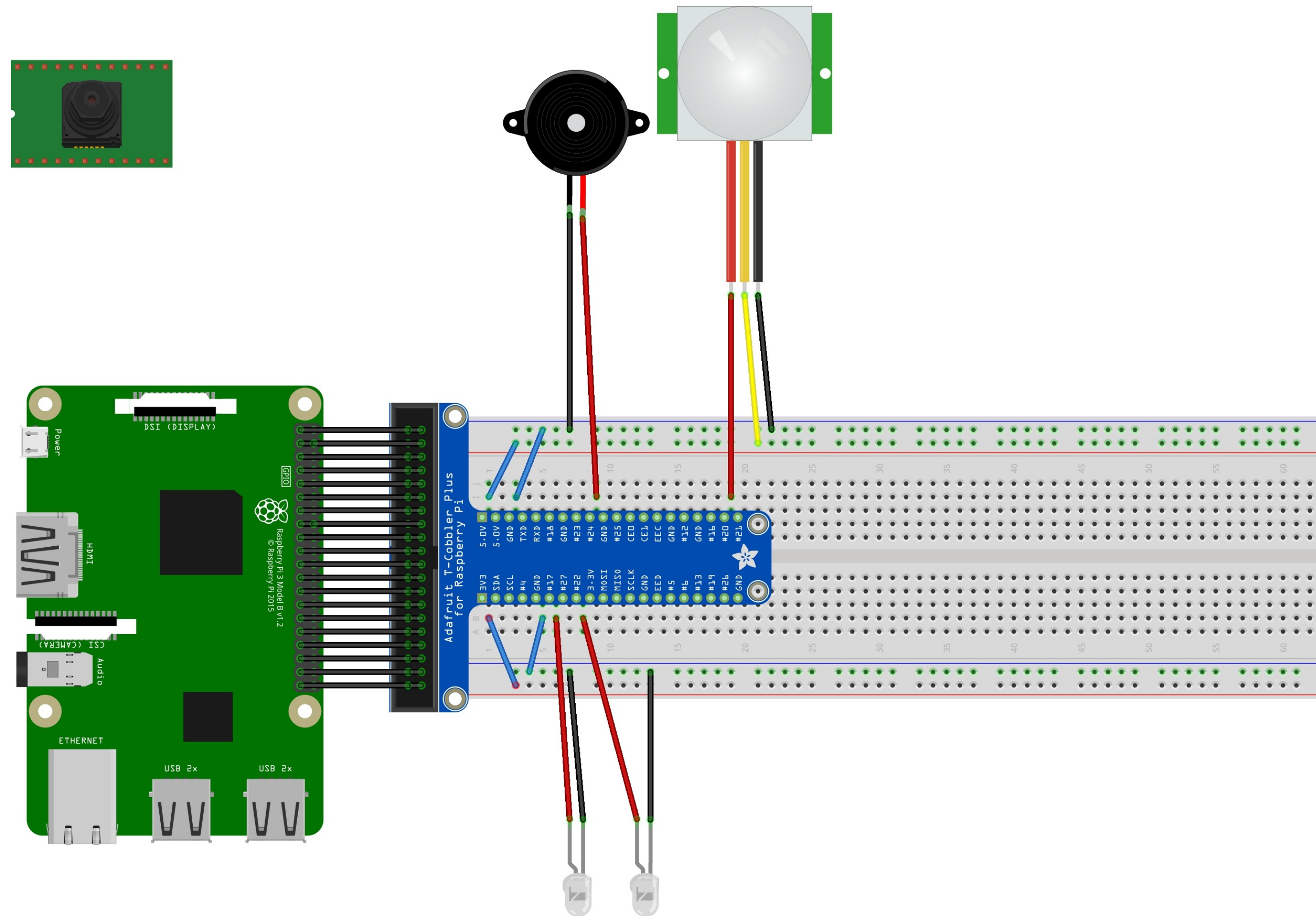
That means you can use this as a buzzer for making beeps, tones and alerts AND you can use it as a sensor, to detect fast movements like knocks.

1.6"x 1.6"  
4.3g  
85db

# System



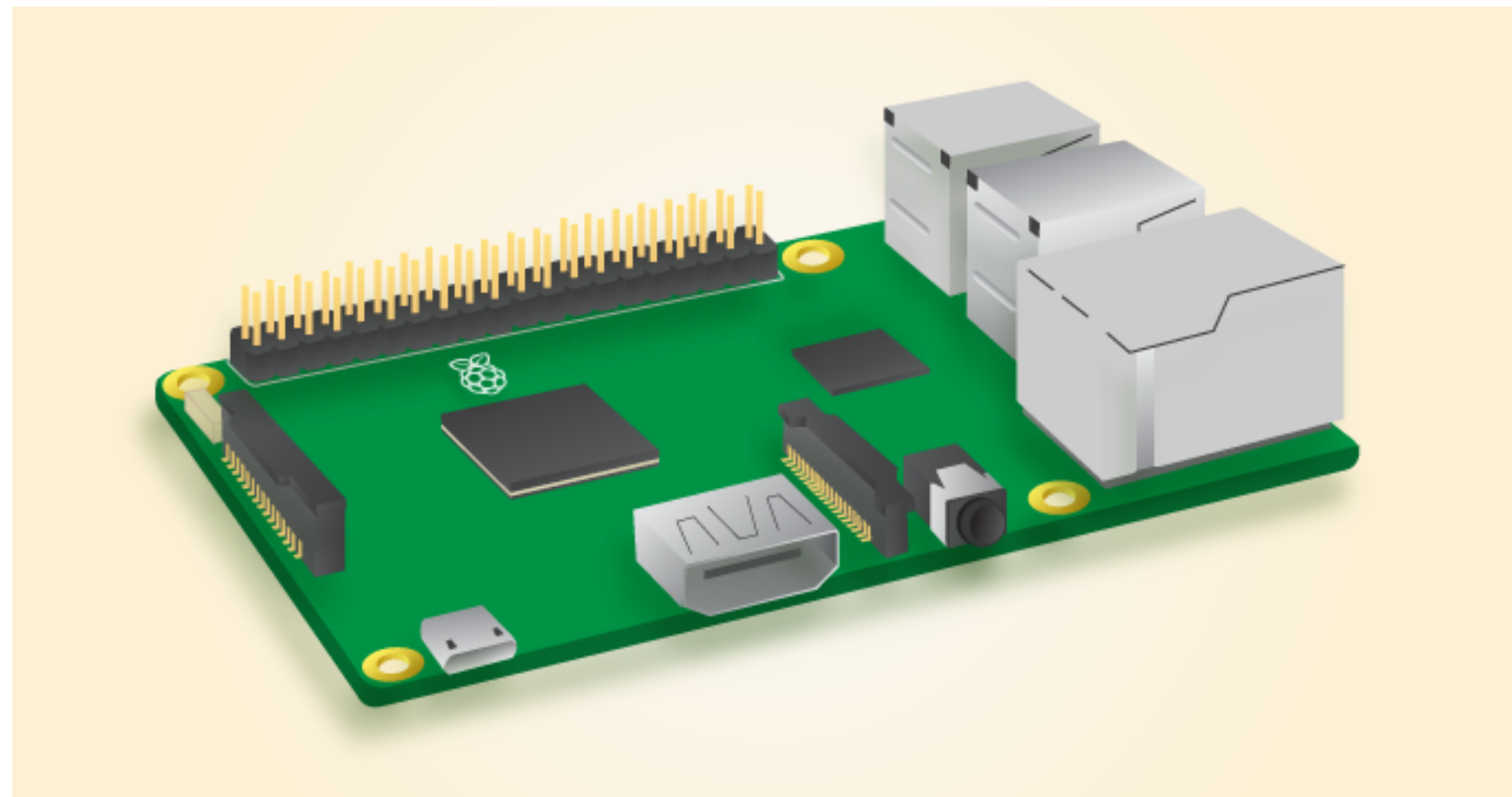
# Hardware Setup



fritzin



# Setup on Raspberry Pi



1

## INSTALL NOOBS

Downloading and installing the Raspberry Pi

2

## LINK TO THE ETHERNET

share Ethernet through USB

\$ arp - a // find pi IP address

\$ ssh ip@192.168.2.2

3

## INSTALL VNC SERVER

\$ sudo apt-get install tightvncserver

\$ vnc server

4

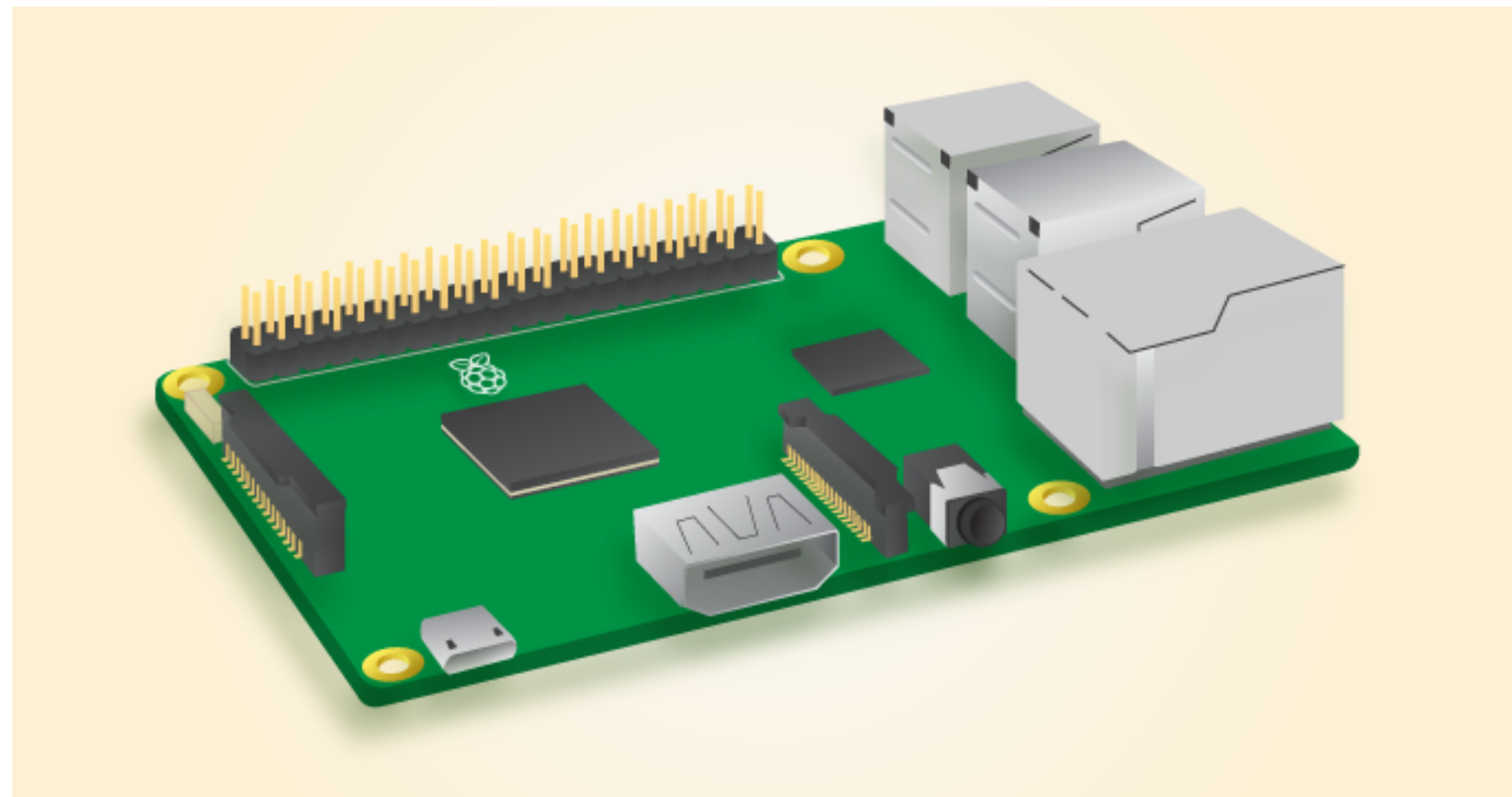
## CONNECT PI USING REALVNC

Downloading and installing RealVNC

IP address: 192.168.2.2:1



# Install Software



1

## INSTALL NODEJS

```
$ curl -sL https://deb.nodesource.com/setup_4.5 | sudo -E  
bash -  
$ sudo apt install -y nodejs
```

2

## INSTALL GIT

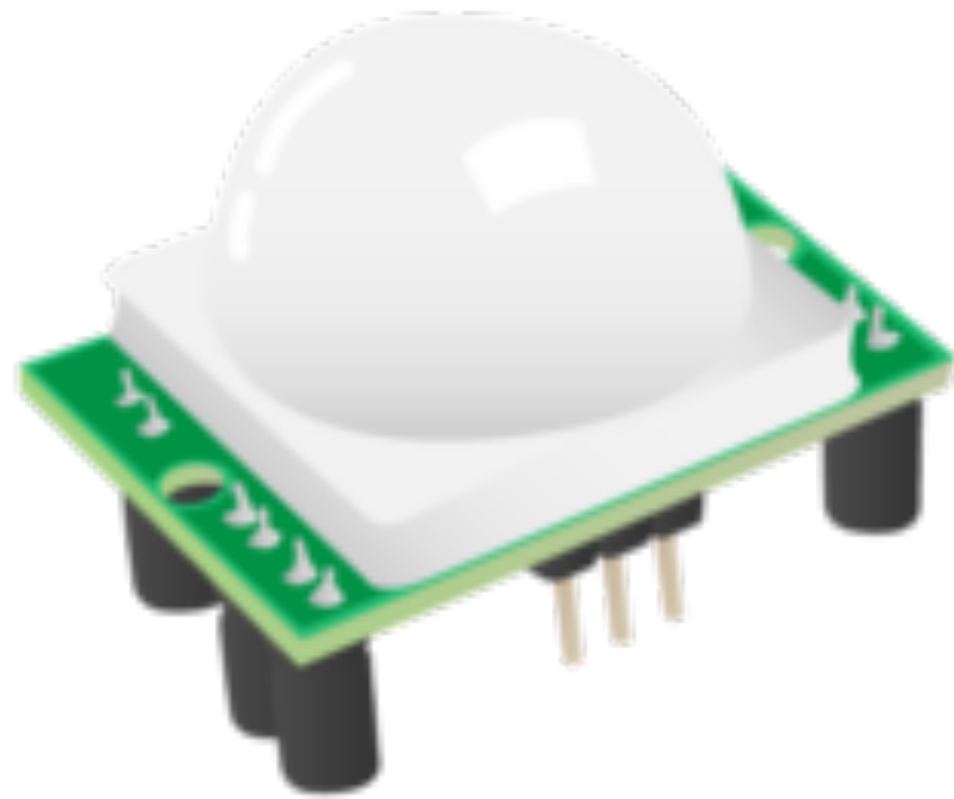
```
$ sudo apt-get install git
```

3

## ADD GITHUB SSH KEY

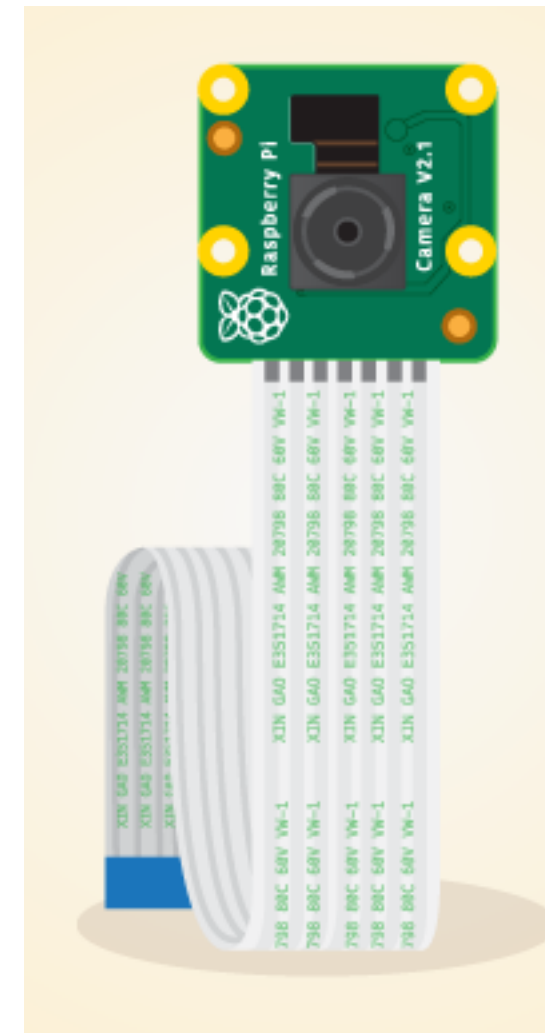
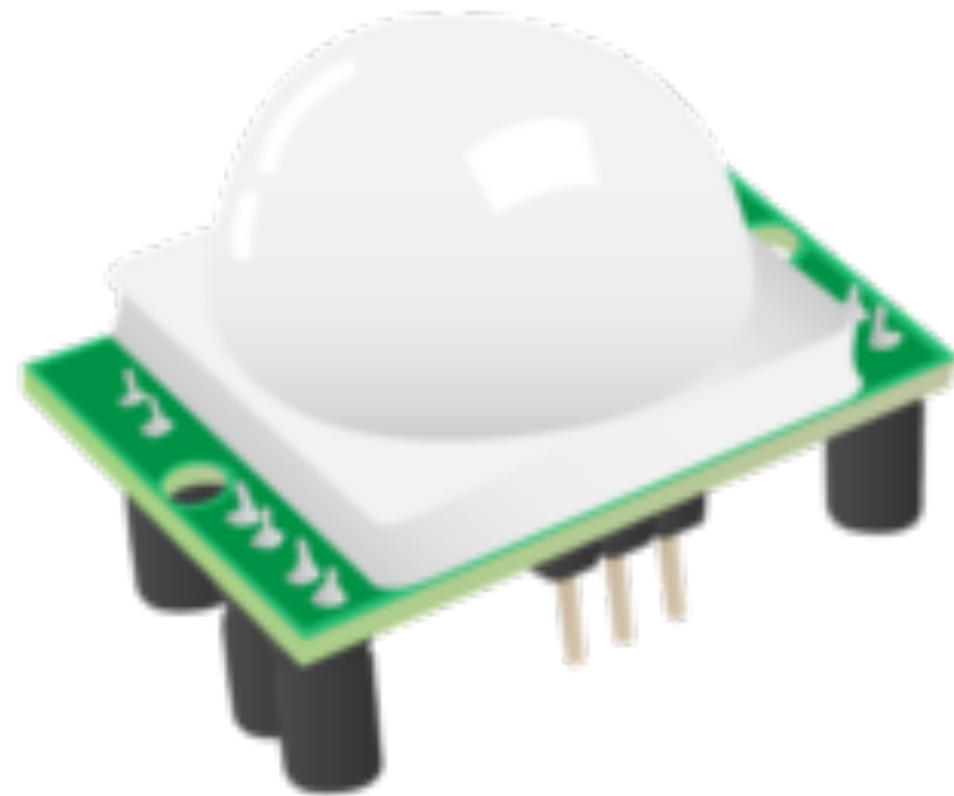
```
$ ssh-keygen -t rsa -b 4096 -C "your_email@example.com"  
$ eval "$(ssh-agent -s)"  
$ ssh-add ~/.ssh/id_rsa
```

# Sensor Testing



- 1 CREATE PROJECT
- 2 NPM ONOFF
- 3 NODE INDEX.JS

# Sensor controlling Camera Testing



1

## TURN ON CAMERA

Locate the camera port and connect the camera.  
Raspberry Pi Configuration→ camera: enabled

2

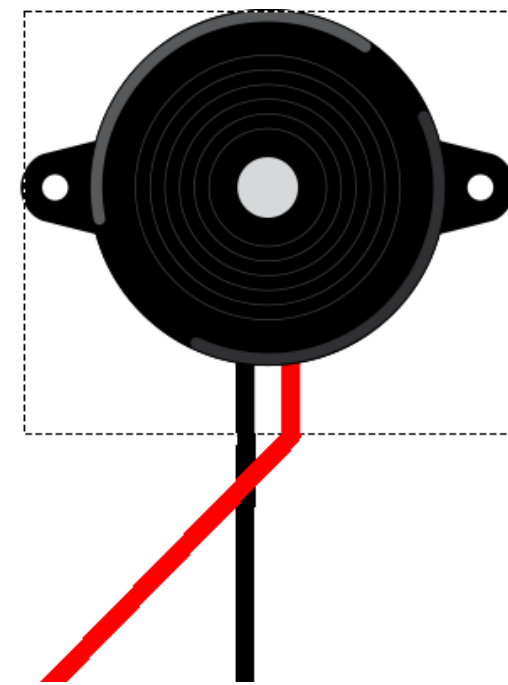
## TESTING CAMERA

```
$ raspistill -o photo.jpg  
$ raspivid -o 123.h264 -t 10000
```

3

## NODE INDEX.JS

# LED and Buzzer Testing



1

CREATE PROJECT

2

NPM ONOFF

3

NODE INDEX.JS



# Socket.IO server to client



1

SETUP SOCKET

2

SENT PHOTO TO CLIENT

ionic



1

RECEIVE PHOTO

2

REQUEST TAKING PHOTO

3

REQUEST TURNING ON BUZZER

## Socket.IO client to server



**1** TURN ON CAMERA TO RECORD

**2** TURN ON BUZZER