

# PCS 3553

## Laboratório de Engenharia de Software II

(quartas-feiras 14:00h ~ 17:40h labsoft)

Foco da Disciplina  
Conceitos e Linhas de Projeto

Reginaldo Arakaki, Romeo Bulla Jr, Victor Hayashi, Elder Nakashima

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# Infraestrutura IoT

- Plataforma Arduino para ESP8266
- Plataforma IoT Blynk
- Exemplo Lâmpada com Demonstração
- Arquitetura TV

	ESP32	ESP8266	ARDUINO UNO R3
Cores	2	1	1
Arquitetura	32 bits	32 bits	8 bits
Clock	160MHz	80MHz	16MHz
WiFi	Sim	Sim	Não
Bluetooth	Sim	Não	Não
RAM	512KB	160KB	2KB
FLASH	16Mb	16Mb	32KB
GPIO	36	17	14
Interfaces	SPI / I2C / UART / I2S / CAN	SPI / I2C / UART / I2S	SPI / I2C / UART
ADC	18	1	6
DAC	2	0	0

Retirado de: <http://blogmasterwalkershop.com.br/embarcados/esp32/conhecendo-o-nodemcu-32s-esp32/>

# Plataforma Arduino para ESP8266

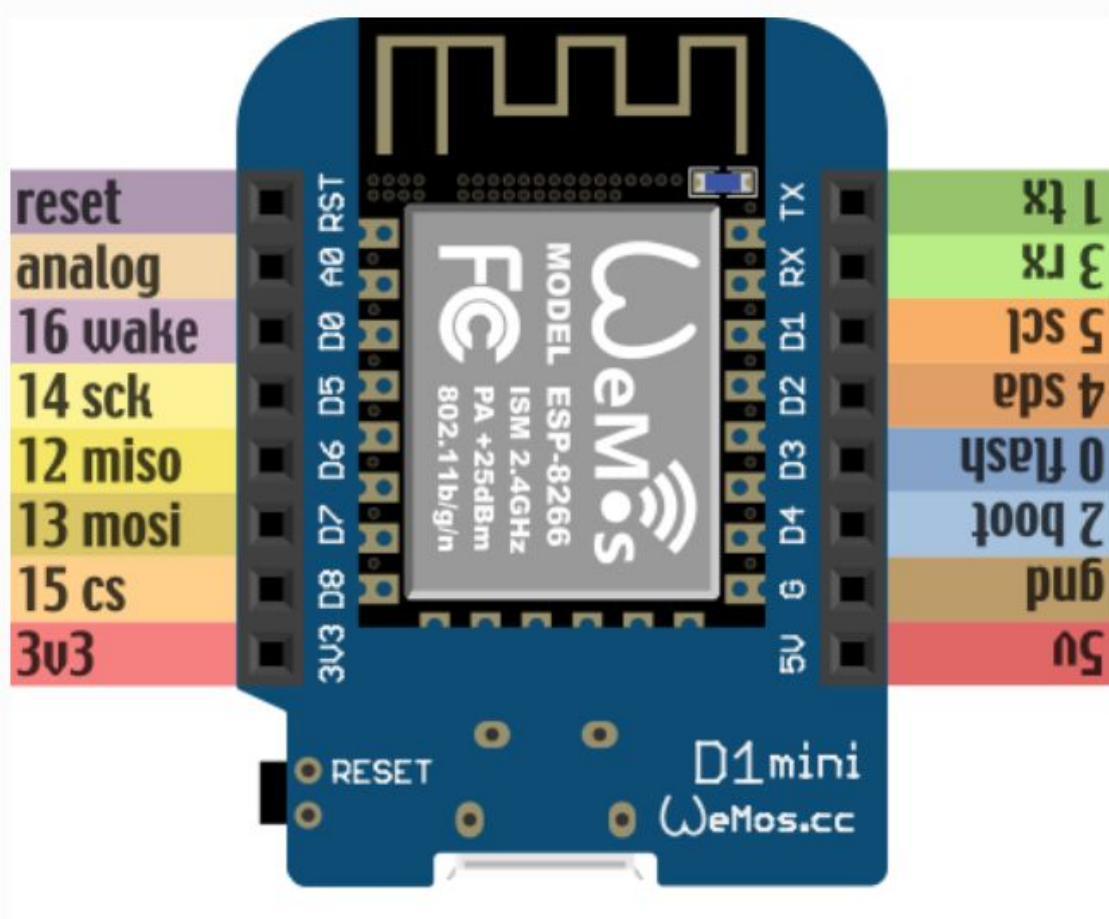
1. Download Arduino IDE
2. Em Preferences:  
[http://arduino.esp8266.com/stable/package\\_esp8266com\\_index.json](http://arduino.esp8266.com/stable/package_esp8266com_index.json)
3. Instalar ESP8266 no Gerenciador de Placas
4. Configurar porta USB e placa Wemos D1 R2

Rodar exemplo “Blink”

# Plataforma IoT Blynk

1. Download Biblioteca Blynk e inclusão no Arduino IDE
2. Adquirir App Blynk e criar conta
3. Criar projeto novo, selecionar email token no App

Rodar exemplo “ESP8266 Standalone” no Arduino IDE  
built-in led GPIO2, visualizar conexão no App



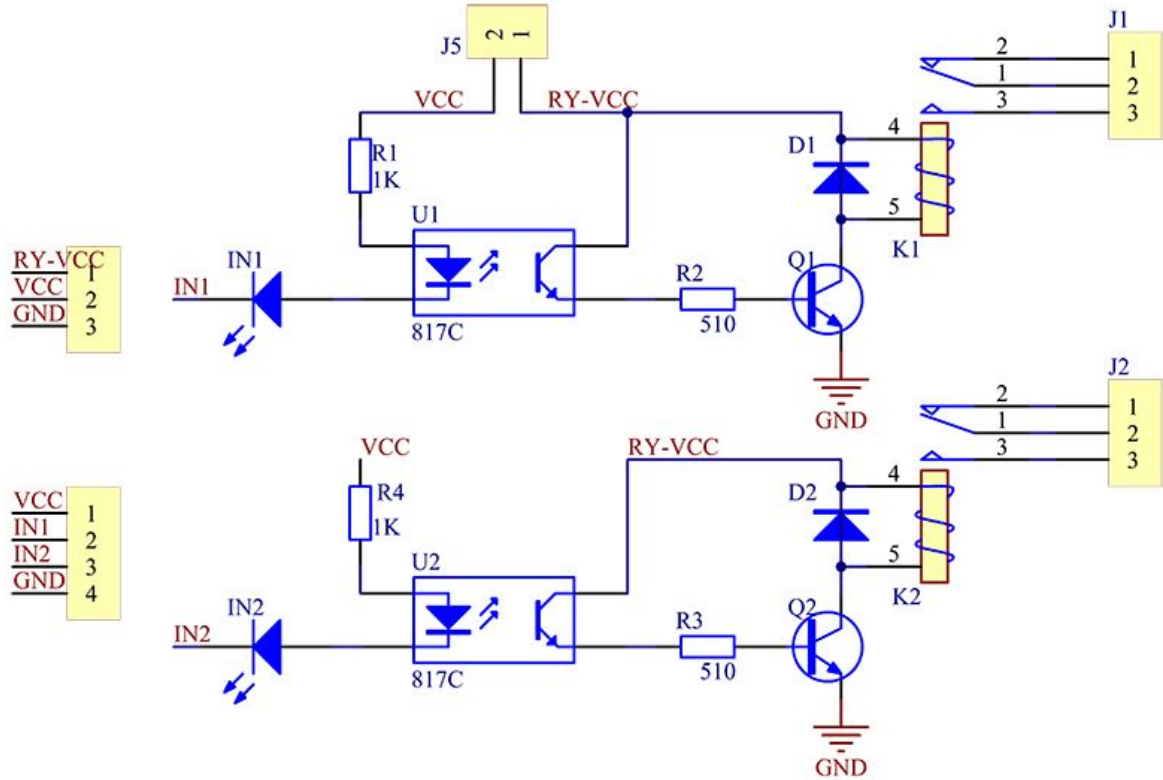
GPIO2  
built in  
led

Retirado de: <https://micropython-on-wemos-d1-mini.readthedocs.io/en/latest/setup.html>

# Exemplo Lâmpada

1. Conexão Física Módulo 2 Relés D1
2. Configuração GPIO4 no App
3. Conexão Física LDR A0
4. Configuração A0 no App
5. Blynk API
6. “Tolerância a falhas de conexão”
7. Voz IFTTT

Demonstração de monitoramento e controle pelo celular, Voz e API REST



Retirado de:  
[http://wiki.sunfounder.cc/index.php?title=2\\_Channel\\_5V\\_Relay\\_Module](http://wiki.sunfounder.cc/index.php?title=2_Channel_5V_Relay_Module)



# Blynk HTTP RESTful API

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## INTRODUCTION

Blynk HTTP RESTful API allows to easily read and write values to/from Pins in Blynk apps and Hardware (microcontrollers and microcomputers like Arduino, Raspberry Pi, ESP8266, Particle, etc.).

Every `PUT` request will update Pin's state both in apps and on the hardware. Every `GET` request will return current state/value on the given Pin. We also provide simplified API so you can do updates via GET requests.

<http://blynk-cloud.com/91d126d0274249dc930bf80c00394d9d/update/D4?value=1>

<http://blynk-cloud.com/91d126d0274249dc930bf80c00394d9d/get/D4>

Retirado de: <https://blynkapi.docs.apiary.io/>

```
/* Comment this out to disable prints and save space */
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

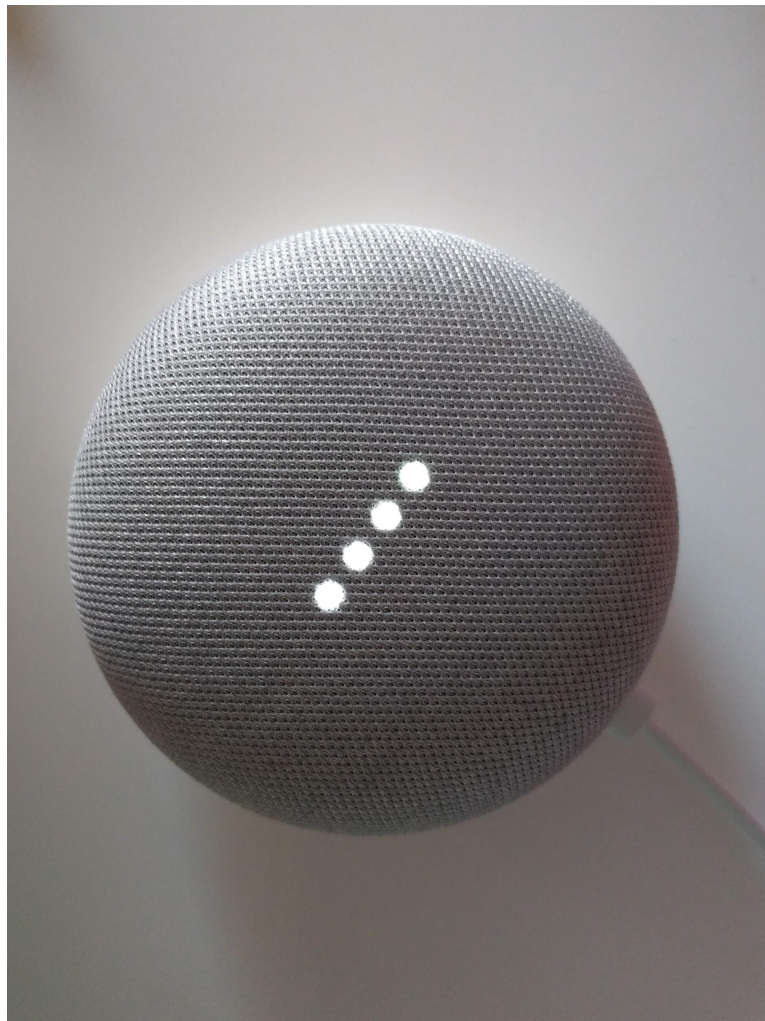
// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "91d126d0274249dc930bf80c00394d9d";

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "YTD960495veredas";
char pass[] = "784257hue031";

void setup()
{
  // Debug console
  Serial.begin(9600);

  Blynk.begin(auth, ssid, pass);
}

void loop()
{
  if (Blynk.connected()) Blynk.run();
  else ESP.reset();
}
```



IFTTT



My Applets



Activity



Search

My Applets > Google Assistant



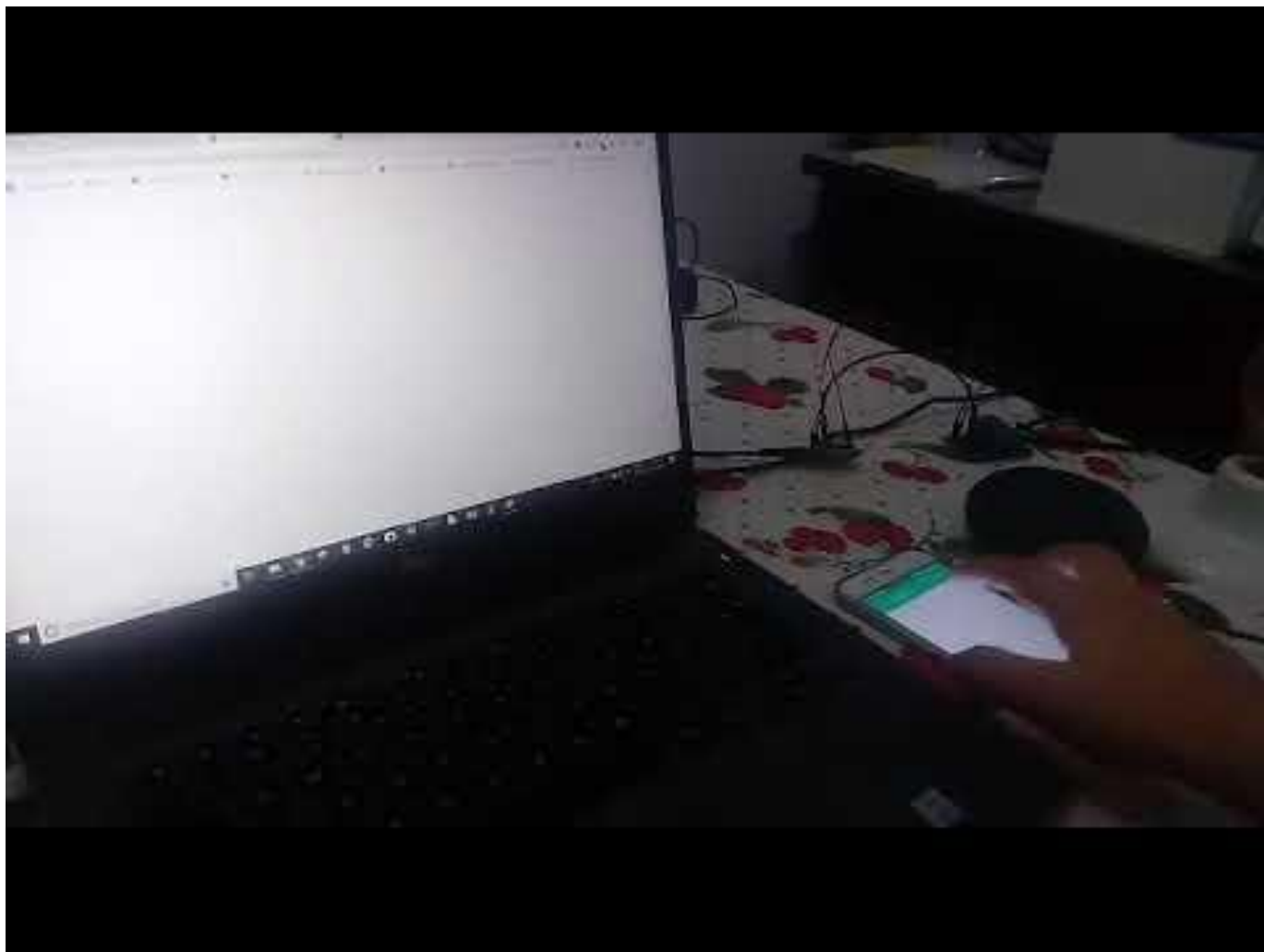
If You say "light bulb", then Make a web request

by  victortakashih

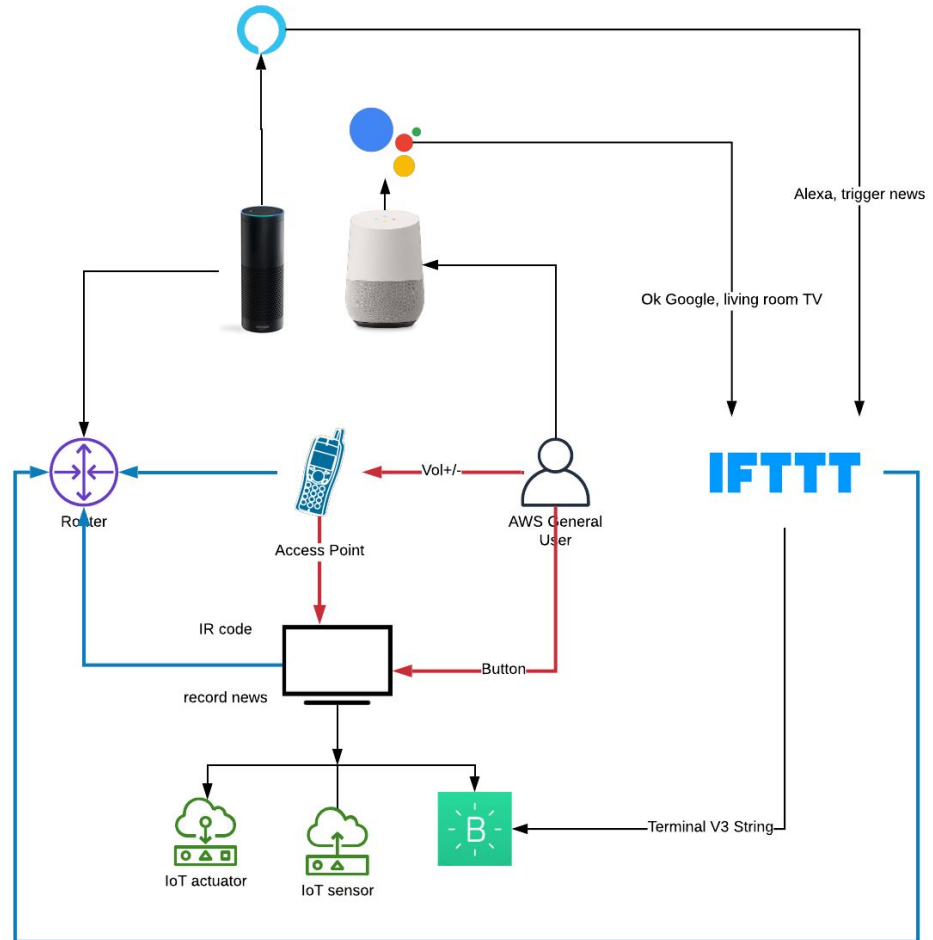
[Learn more](#)

On





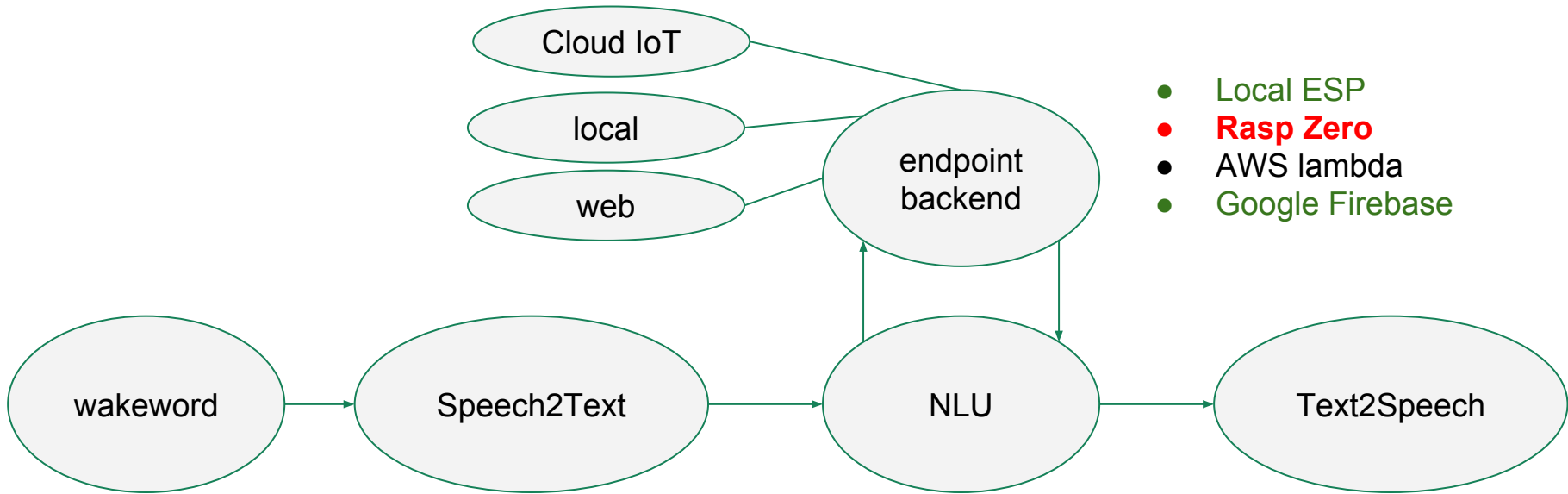
# Arquitetura TV



# Spoilers[1]: Infraestrutura Voz

- IFTTT + Google Assistant + Alexa
- Plataforma DialogFlow: Intents, Entities, Endpoint
- Exemplos: TV, Iluminação, Presença, Lista de Compras

# Arquitetura Voz



- basic cmd
- local

- txt
- Google pt-BR

- DialogFlow
- RASAS
- Alexa Skill

- Google TTS
- Alexa Polly

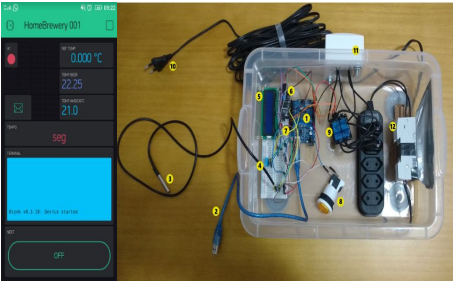
Alexa  
Google Home

## Spoilers[2]: Infraestrutura IoT - Tolerância a Falhas

- Queda de Serviço Cloud
- Queda de Internet
- Queda de Rede Local
- Queda de Energia Intermitente
- Queda de Energia Longa
- Evil Twin
- Hard Reset
- Atualização de Firmware
- API e Aplicativo web locais
- Queda do Módulo
- Queda do Integrador do Ambiente
- Queda do Integrador da Casa



# Evolução Arquitetural IoT



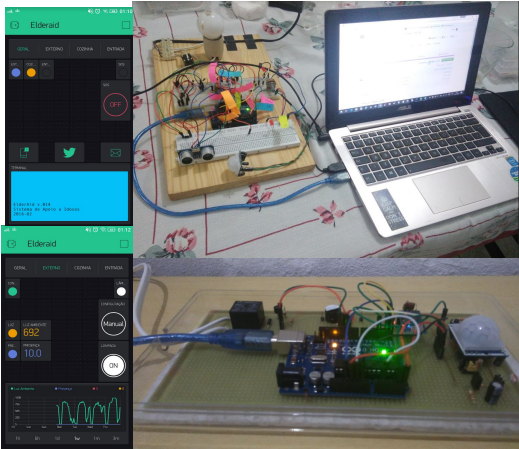
2016



2017



2018



Veja guias em:

Medium

hackster

FilipeFlop

instructables

Arduino.cc