Automate your home

with **Home Assistant**

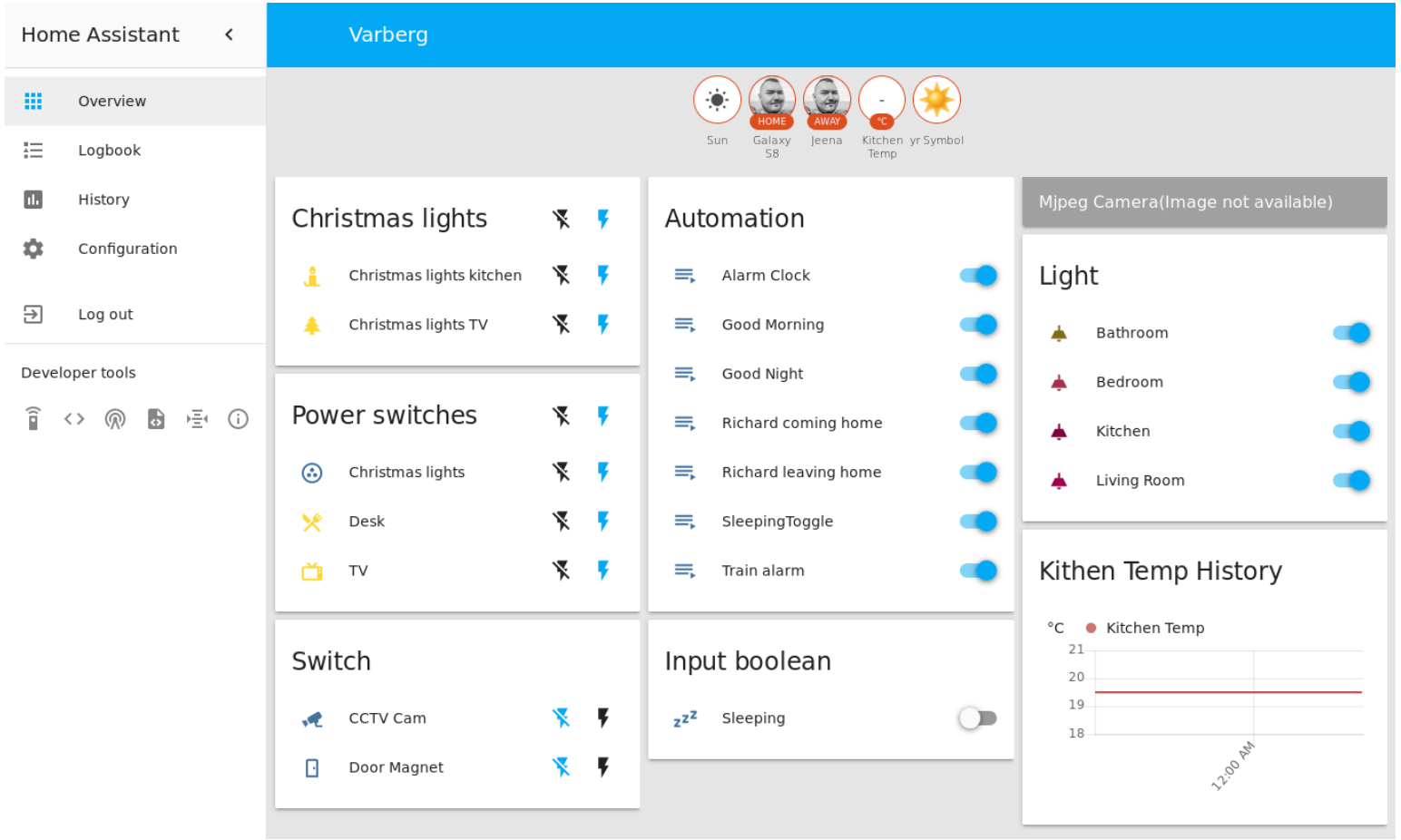
Alternatives

- Very convinient
- Everything happens in the Cloud
- Nice looking bricks without internet connection
- Always listening and sending home data about you
- No incentive to integrate with other brand’s hardware

What is Home Assistant?

- A central software which can listen to events which are happening in connected hardware, trigger automations and log what is happening
- Frontend written with Polymer and WebComponents
- Backend written in Python
- Over 1000 integrations to hardware and software
- Can be run everywhere where Python runs, Raspberry Pi, NUC, Laptop, Desktop, Server
- Really big community

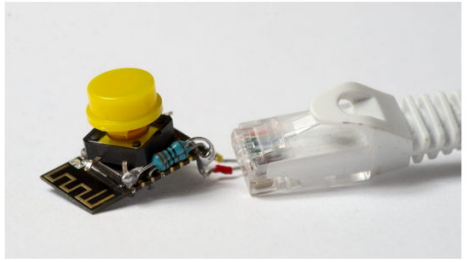
UI example

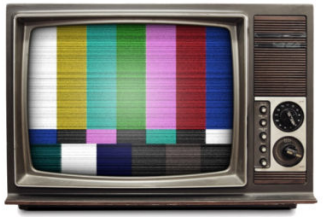

Home Assistant
Overview
Logbook
History
Configuration
Log out
Developer tools
Varberg
Sun
HOME
Galaxy S8
AWAY
Jeena
-
°C
Kitchen Temp
yr Symbol
Christmas lights
Christmas lights kitchen
Christmas lights TV
Power switches
Christmas lights
Desk
TV
Switch
CCTV Cam
Door Magnet
Automation
Alarm Clock
Good Morning
Good Night
Richard coming home
Richard leaving home
SleepingToggle
Train alarm
Input boolean
Sleeping
Mjpeg Camera(Image not available)
Light
Bathroom
Bedroom
Kitchen
Living Room
Kithen Temp History
°C
Kitchen Temp
21
20
19
18
12:00 AM

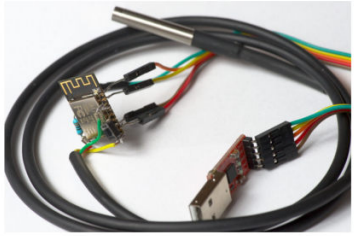
Hass.io

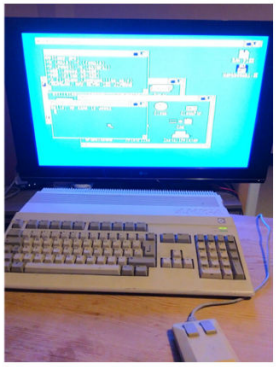
- Super easy to set up:
  - Image to flash on your Raspberry Pi
- Extensible with from the UI available extensions (implemented as Docker images)
- Automatic updates
- Not as much controll over the software

My (small) hardware setup

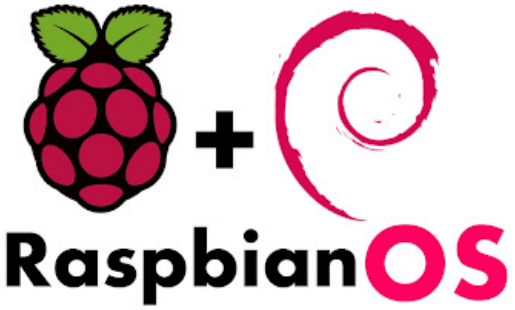








Software setup



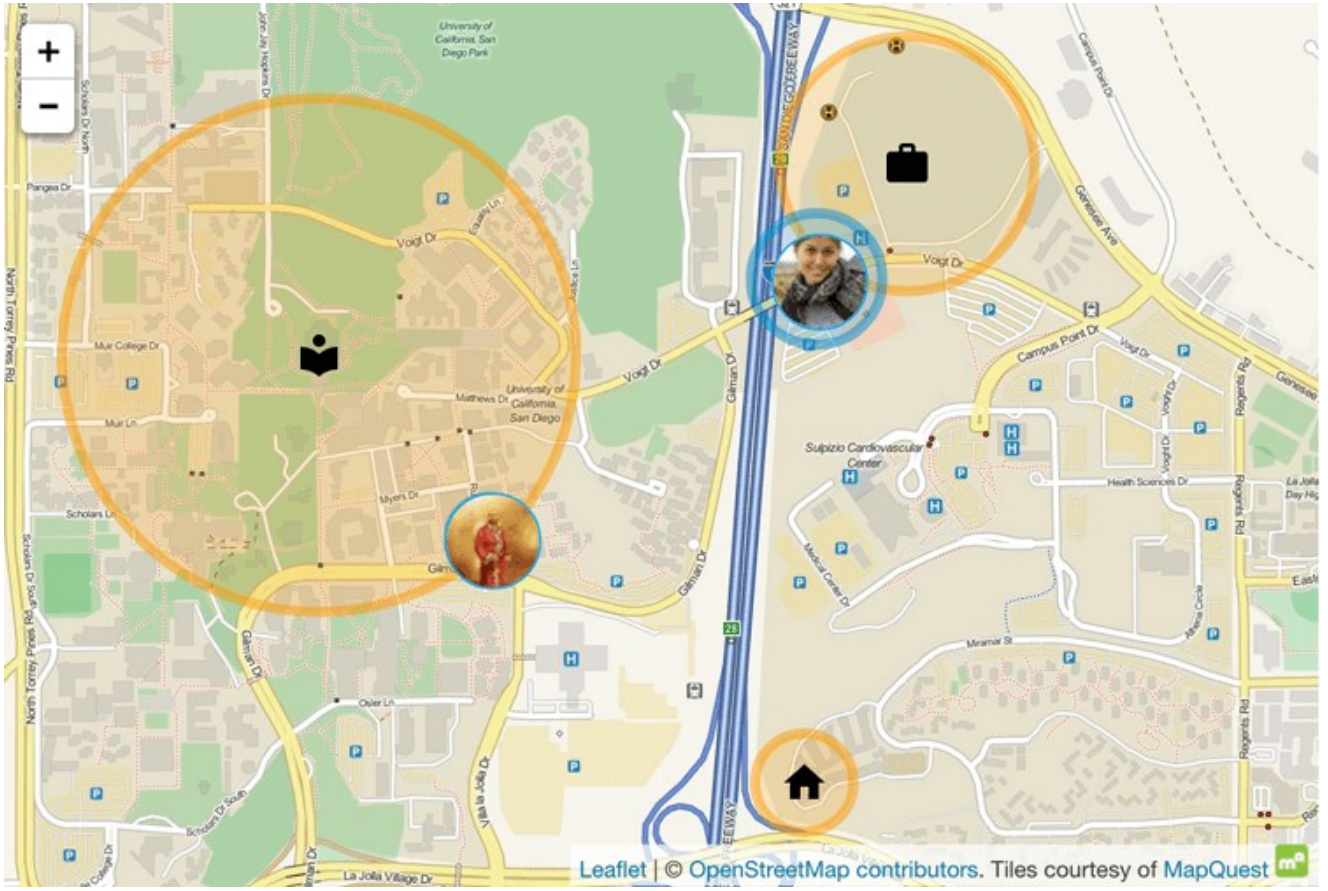
YEELIGHT

TELLDUS®

My way of setting it up

1. Install Haspbian on Raspberry Pi
2. Compile + install telldus-core
3. Configure TellstickDuo
4. Install and configure BlueZ
5. Configure Home Assistant for hardware
6. Write automations
7. Build WiFi termometer and button
8. Configure them to be usefull in HA

Presence detection



Presence detection technology

Google Maps location sharing

Automating lights

- The easiest use case to come up with
- The easiest to set up
- Fairly expensive to replace all lights, especially to make it user friendly
- Cool show off effects
- Grouped in logical groups

- My setup are wifi bulbs with a open protocol
- Problematic when people use the switches
- Better, but more expensive, to replace the light switches.

More wireless technologies

LPD433

- Low power device 433 MHz
- UHF band in which licence free communication devices
- No mesh networking functionality
- No common protocoll
- Used for Citizens band radio
- Many have Nexa switches

- Open protocol
- Defined by ZigBee Alliance
- Mesh networking technology
- Philips Hue uses it

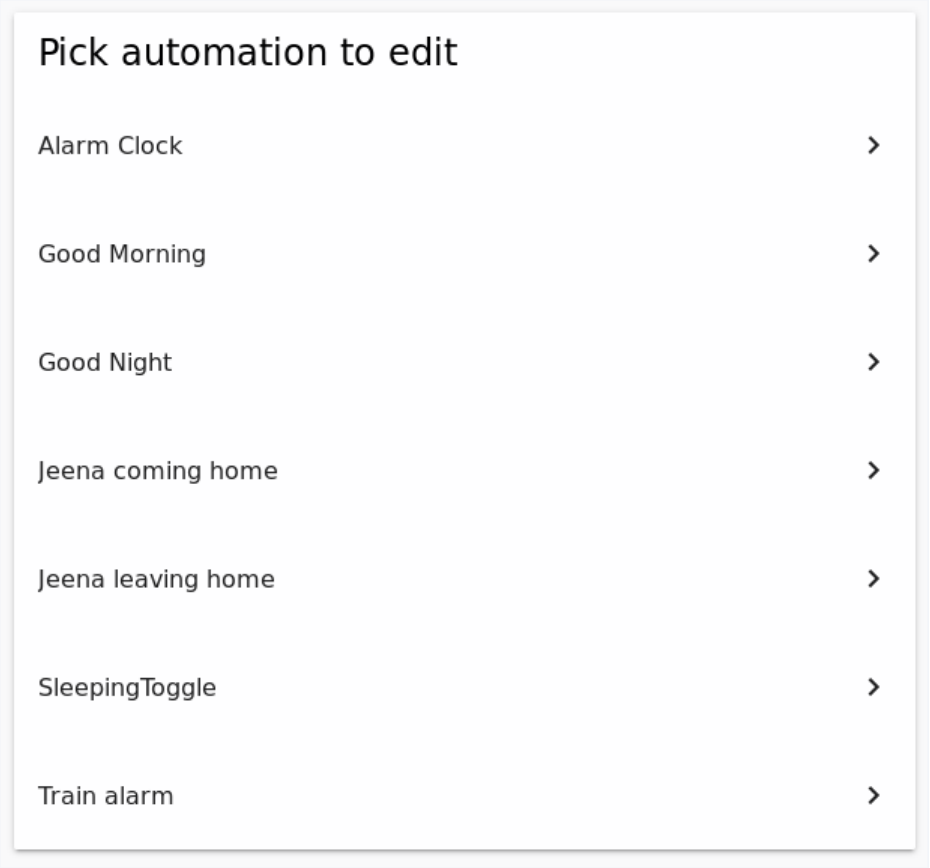
- Closed protocol
- Only available to their custommers
- Mesh networking technology
- Simple protocol

Saving energy

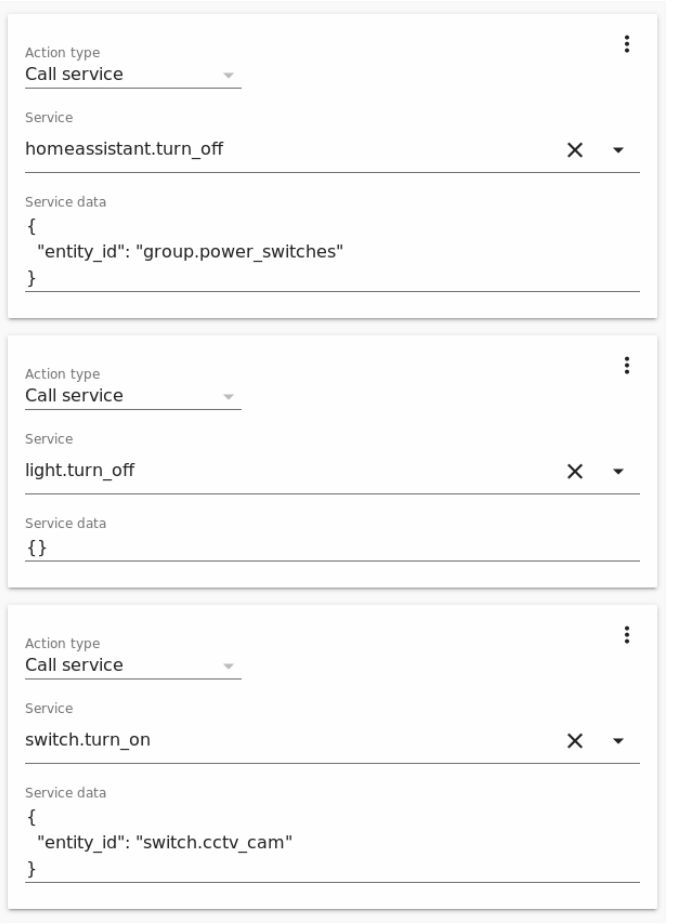
- Automation to cut the power when I leave:
  - TV
  - Music amps / subwoofer
  - WiFi Access Point
  - Computer
  - Screen
  - Christmas lights
  - Ethernet switches
- Might want to add in the future:
  - Kitchen stove
  - Iron
  - Microwave

Automations

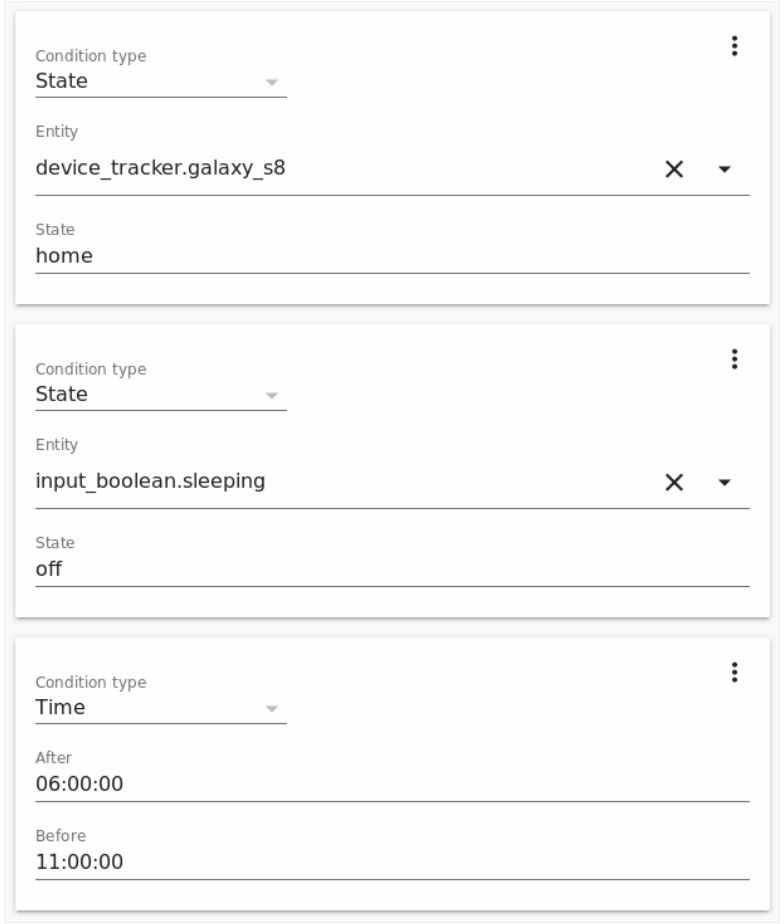
- The heart of the system
- I don’t have many yet but they’re fun

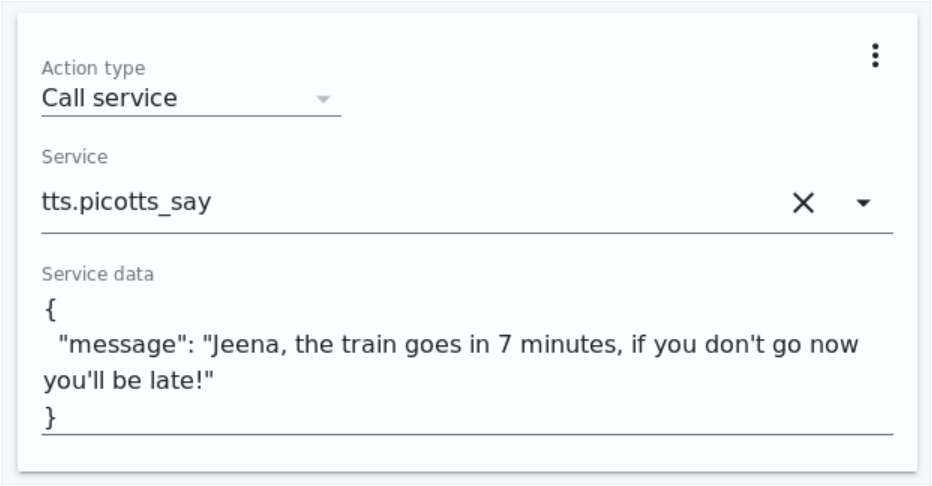


Automation UI



Automation UI 2





Configuration

- Many things possible in UI
- Everything else in yaml config files
- Hardware configuration like normally on Linux in /etc

```
device_tracker:
  - platform: bluetooth_tracker
    track_new_devices: no

mqtt:
  broker: localhost
  port: 1883
  client_id: home-assistant
  username: !secret mqtt_user
  password: !secret mqtt_password

light:
  - platform: yeelight
    devices:
      192.168.1.182:
        name: Bathroom
        transition: 1000
      192.168.1.122:
        name: Living Room
        transition: 1000
```

CCTV

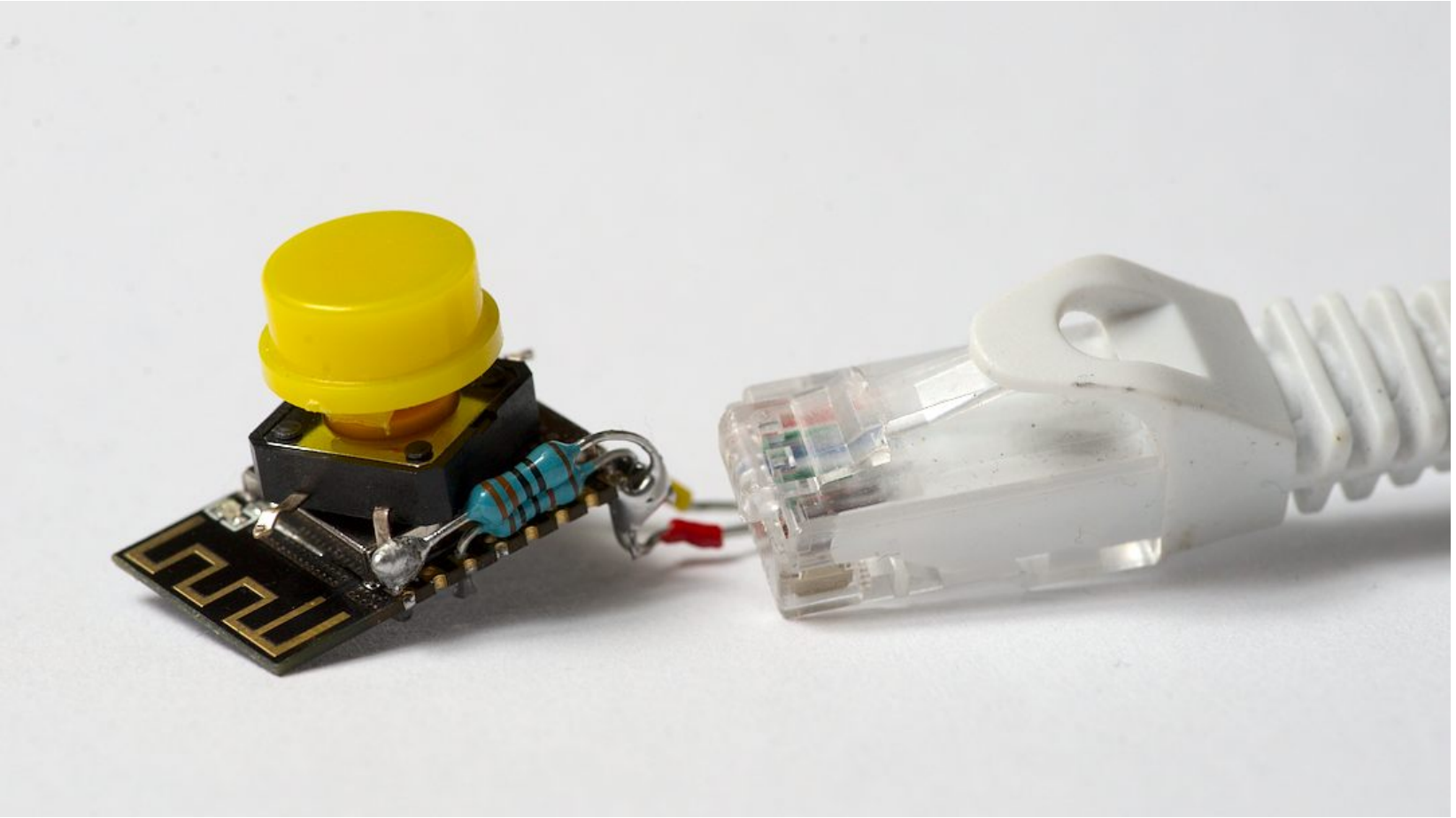
- Only has power when I’m away
- Remote controll via open ONVIF protocol
- left, right, up, down
- MJPEG stream directly to the browser or HA UI
- Movement detection + notification on phone

States in my flat

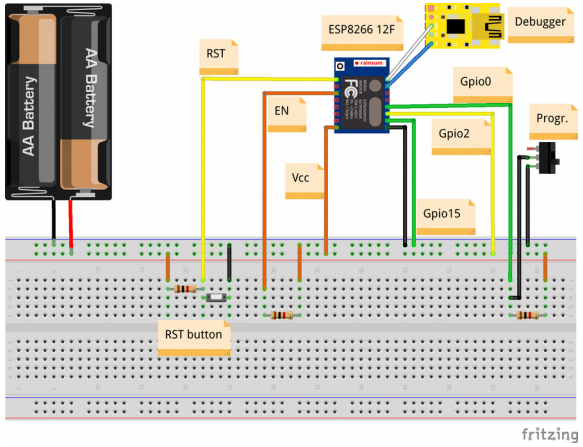
- **Am I present?**
- Bluetooth
- If my mobile phones Bluetooth is visible to the Rpi3's Bluetooth chip, doesn't need to be paired

- **Am I sleeping?**
- ESP8266 Button
- Sends MQTT message to HA on boot
- I press the button when I go to sleep and when I wake up

ESP8266-Button



Open Source Hard- & Software



Setup:

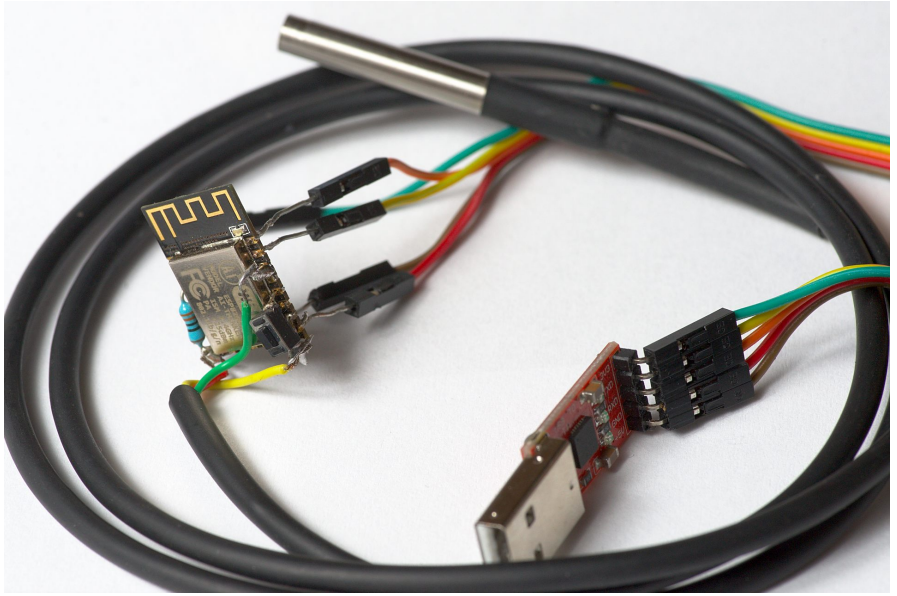
```
#define ssid "myssid"
#define password "mypass"
#define mqtt_server "example.com"
#define mqtt_port 1883
#define mqtt_user "user"
#define mqtt_password "passwd"
#define topic "sensor/sleeping"
#define topic_content "toggle"
```

- My first Open Source Hardware project
- Schema designed with fritzing
- Software is GPLv3
- Documentation on how to flash with Arduino IDE
- Consumes minimal amount of energy because it only runs for 2 seconds after pressing the button then goes to deep sleep
- Low lag, about 1s to boot, send MQTT message and HA switching on/off lamps

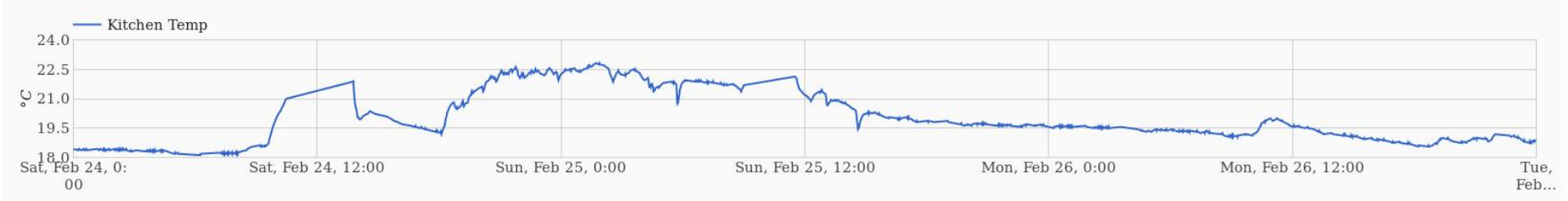
Let’s look at the code

https://github.com/jeena/esp8266-button/blob/master/espbutton/espbutton.ino

Kitchen Temperature

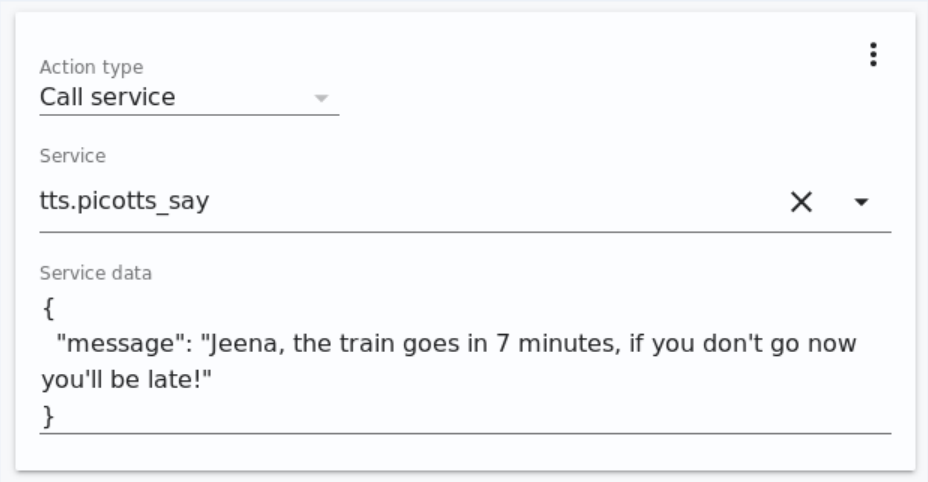


- It’s cold in my flat but I need data on how cold it is
- ESP8266 (24 SEK) + DS18B20 (17 SEK) + old USB changer (0 SEK)
- Built in HTTP server responds to GET requests with a plaintext floating number like: 19.03
- https://github.com/jeena/esp8266-temperature
- Still need to document the hardware
- HA calls it periodically and saves the temperature in it’s database
- Interesting party weekend graph

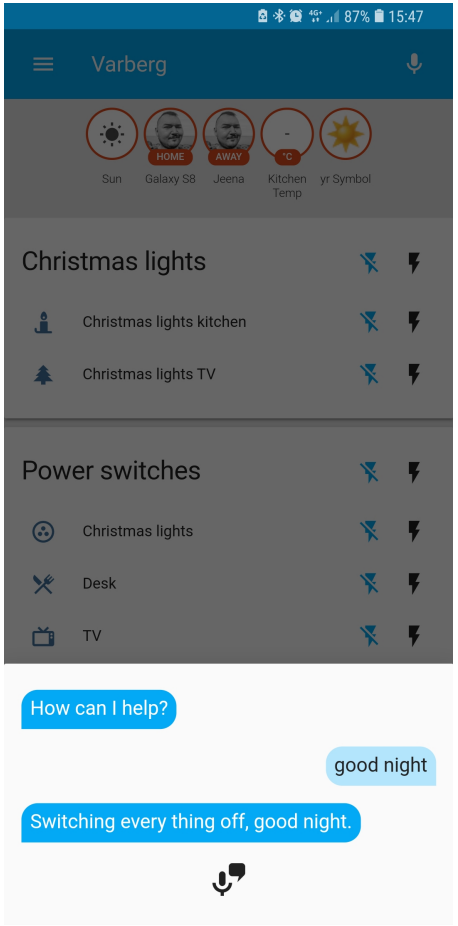


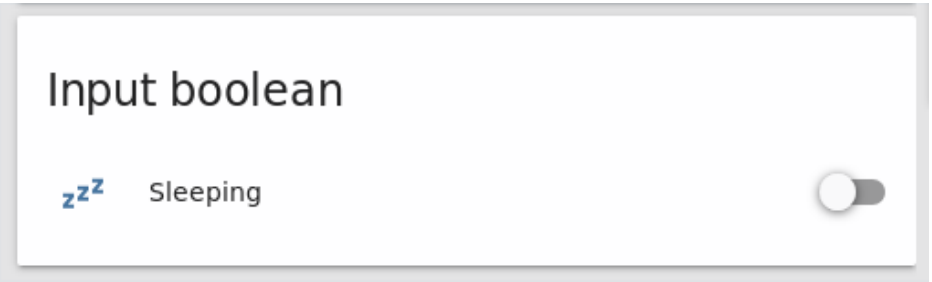
Train alarm

- I always missed the train to work in the morning because I didn’t look at the clock often enough
- Now HA reminds me that the train leaves really soon
- Speach is done locally by libttspico-utils, not in the cloud
- Might want to turn it off when in recorded telco with 100 people, otherwise it interrupts you several time



Different ways to trigger





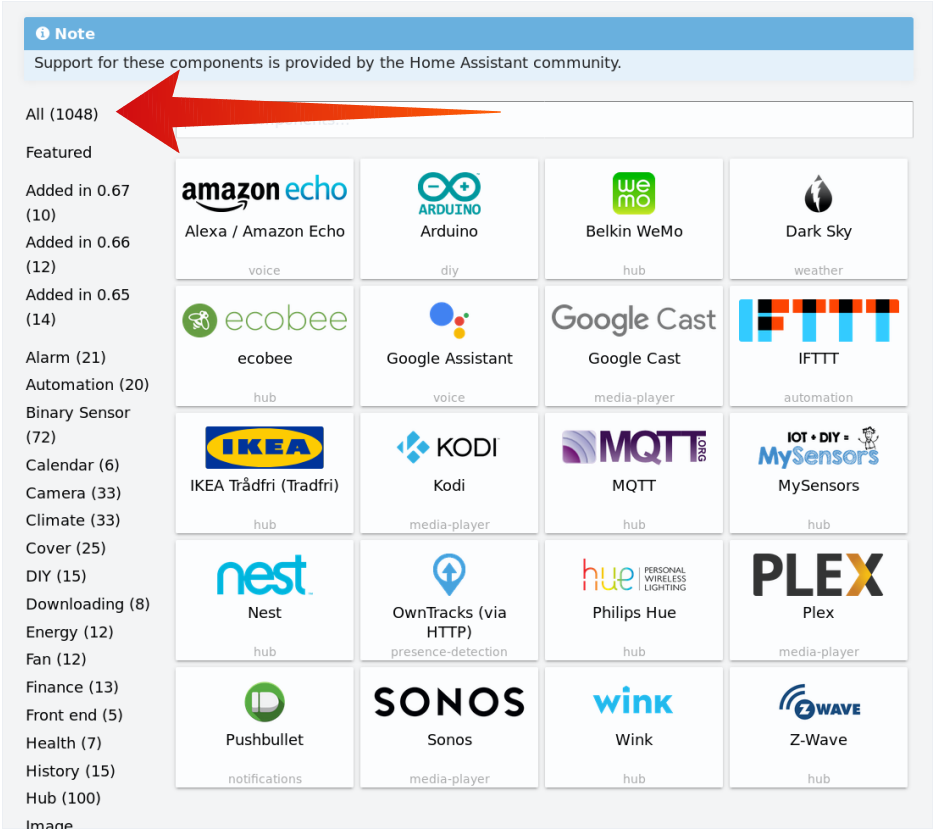
Speaking with your HA and intents

 # Allows you to issue voice commands from the frontend in enabled browsers

```
conversation:
  intents:
    TellTime:
      - What time is it
    GoodNight:
      - Good night
    GoodMorning:
      - Good morning
```

```
intent_script:
  TellTime:
    speech:
      text: "Current local time is {{now().hour}}: {{now().minute}}"
    action:
      service: tts.picotts_say
      data_template:
        message: "Current local time is {{now().hour}}: {{now().minute}}"
        cache: false
  GoodNight:
    speech:
      text: "Switching every thing off, good night."
    action:
     service: input_boolean.turn_on
     data:
       entity_id: input_boolean.sleeping
```

HA has over 1000 integrations



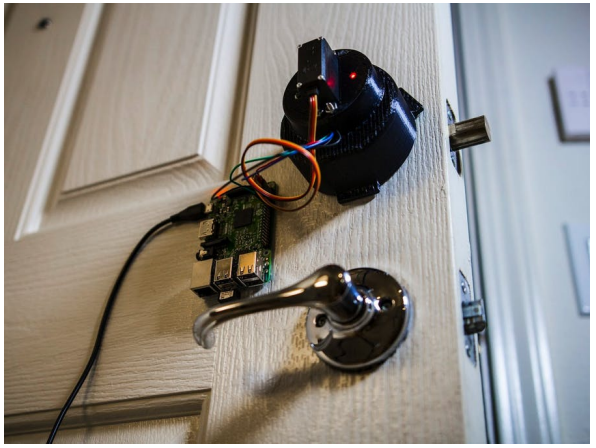
- About 10 commits per day
- Over 100 contributors
- Apache 2.0 license
- Forum
- Chat

Helper software I use

- DuckDNS for access dynamic IP via subdomain
- Letsencrypt for HTTPS
- ZoneMinder for motion detection at other places where I only have a CCTV video stream

My future plans

- Motion sensor at the toilet to switch the light on during the night
- Moving to a more powerfull machine, a NUC
- Voice recognition without cloud via snips, very difficult
- Unlocking the front door when I’m close by and automatically lock it afterwards



Questions / Discussion