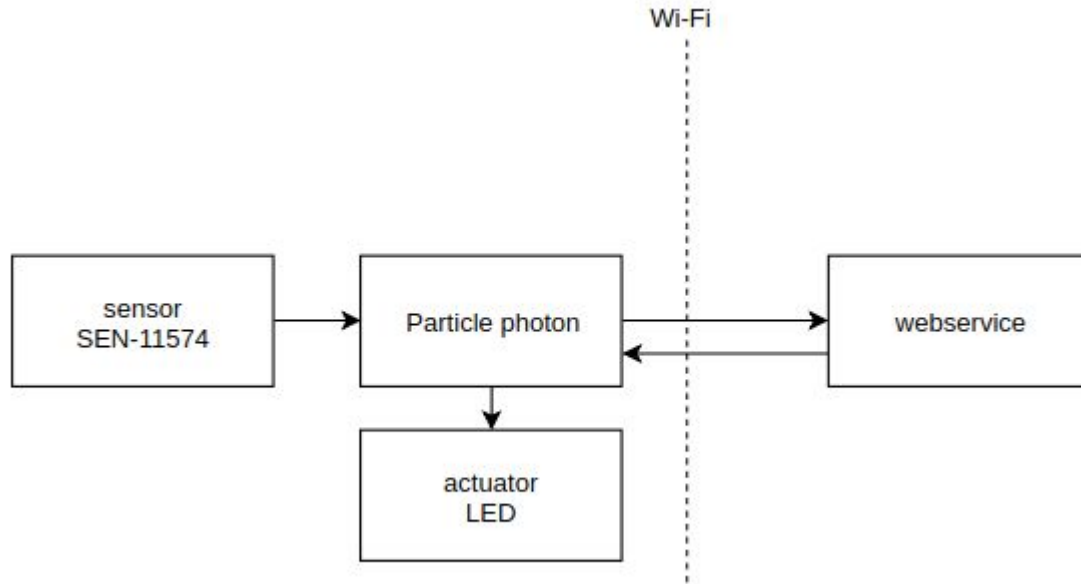


Eksamen IOT

winter 2018 - Tobias Valbjørn - PulseIOT



Resting Heart Rate for MEN

	Age	18-25	26-35	36-45	46-55	56-65	65+
Athlete		49-55	49-54	50-56	50-57	51-56	50-55
Excellent		56-61	55-61	57-62	58-63	57-61	56-61
Good		62-65	62-65	63-66	64-67	62-67	62-65
Above Average		66-69	66-70	67-70	68-71	68-71	66-69
Average		70-73	71-74	71-75	72-76	72-75	70-73
Below Average		74-81	75-81	76-82	77-83	76-81	74-79
Poor		82+	82+	83+	84+	82+	80+

Functional requirements

Need to have:

1. The platform has Wifi connectivity, and the system will connect over Wifi.
2. When the Wifi has been set up, the system should automatically connect to the internet when power is turned on.
3. After power is on, the application should start running automatically.
4. The platform has available digital or analog I/O to connect sensors and actuators.
5. The system reads the resting heart rate from a heart rate sensor local to the device.
6. The system should be able to send the heart rate locally from the particle photon to thingspeak.
7. The device controls actuators in the form of an LED.
8. The device uses data from thingspeak to augment what it does, by giving the user feedback on the LED.
9. The webservice should be able to show the results of the heart rate test on thingspeak.

Nice to have:

10. The system should be able to measure the heart rate accurately. Within 2 bps difference from a Garmin Vivosport heart rate monitor.
11. The whole system should be able to fit into a box with the maximum dimensions of length 15 cm, width 10 cm, height 8 cm.
12. The system should be able to store the necessary information of 1 user from the website. (age, sex, previous heart rate measurements, category, and date)
13. The webservice should be able to compare the heart rate data with the heart rate table.
14. The webservice should be able to compare the heart rate data with previous data.

Non-functional requirements

- The system needs to be simple, with as few user interactions as possible.
- The system functionality will be focused on the task of measuring the resting heart rate.
- Existing standards and protocols will be used wherever possible.
- The system will be calm when everything is working fine. It will not bring attention to itself beside when giving the user instruction or feedback.

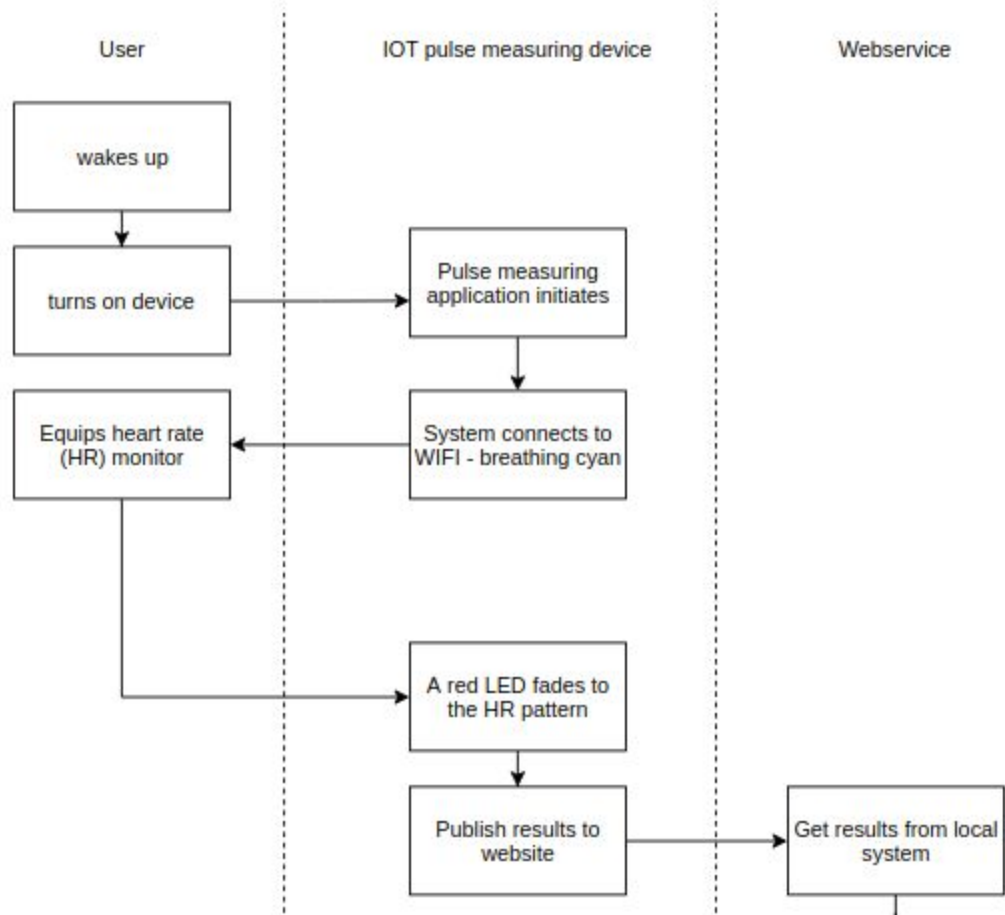
Overview

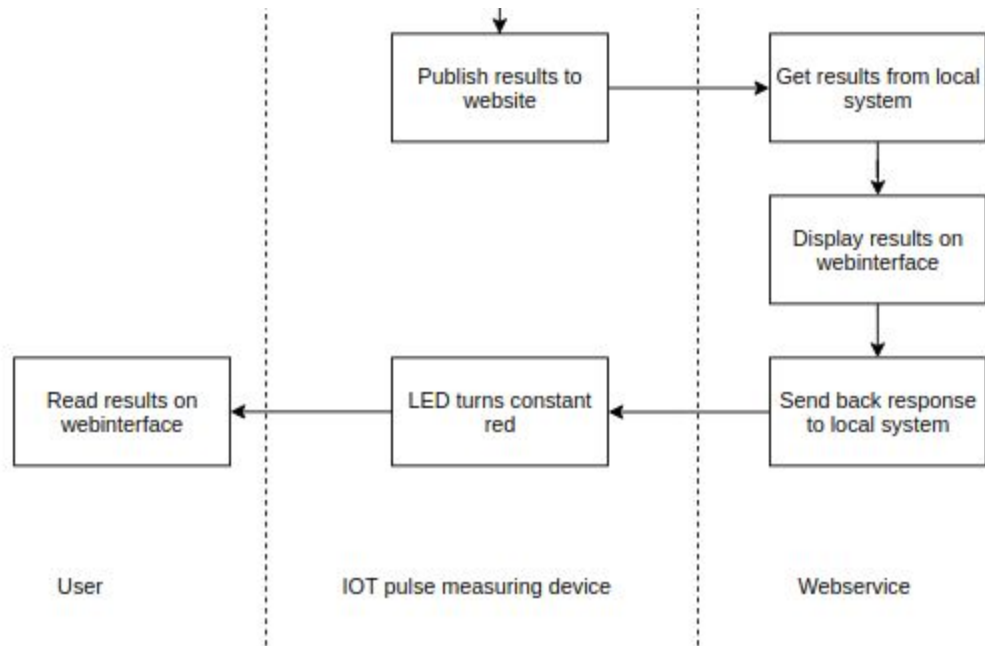
A complete table of the particle photon pins and the devices that are connected to them:

Particle Photon Pins	Device using
VIN	Heart rate sensor, red LED
GND	All devices
A2	Heart rate sensor
D3	Red LED

A simple overview of the logic in the system:

Quantity being measured	Input Devices (sensors)	Output devices (Actuators)
Heart rate	Heart rate sensor	red LED

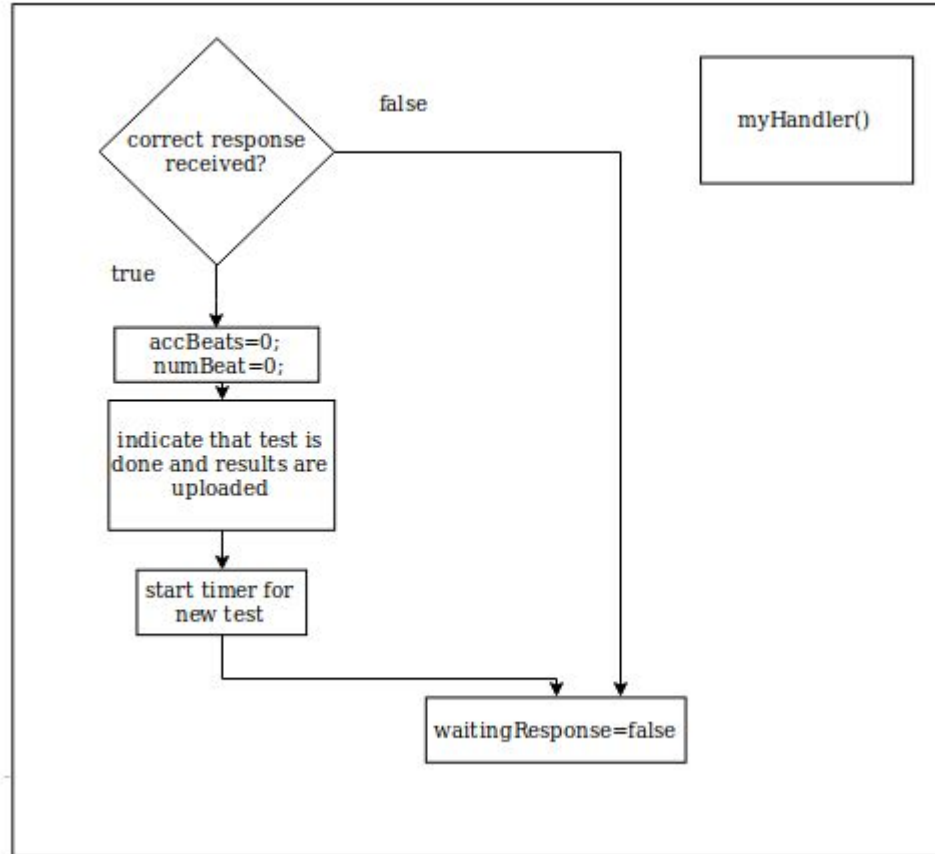


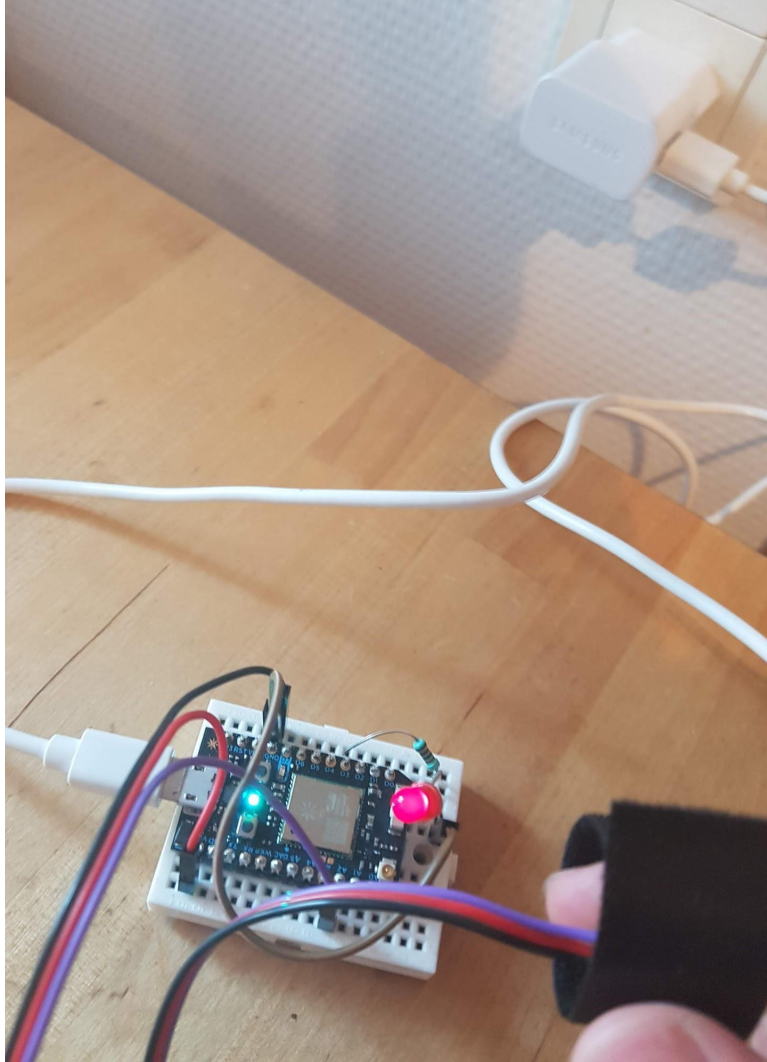


Flowdiagram





<https://drive.google.com/file/d/1c-nmxDgNXrhWbl4V6TQCM6ZlAnMZIsoY/view?usp=sharing>

myHandler()





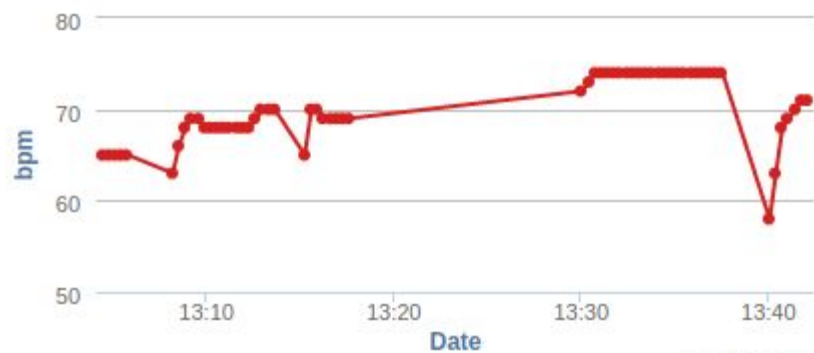
Events

				<input type="text" value="Search for events"/>	ADVANCED
NAME	DATA	DEVICE	PUBLISHED AT		
hook-response/bpm/0	219	particle-internal	10/16/18 at 1:42:06 pm		
hook-sent/bpm		particle-internal	10/16/18 at 1:42:06 pm		
bpm	71	chicken_turkey	10/16/18 at 1:42:06 pm		
hook-response/bpm/0	218	particle-internal	10/16/18 at 1:41:46 pm		
hook-sent/bpm		particle-internal	10/16/18 at 1:41:46 pm		
bpm	71	chicken_turkey	10/16/18 at 1:41:46 pm		
hook-response/bpm/0	217	particle-internal	10/16/18 at 1:41:26 pm		
hook-sent/bpm		particle-internal	10/16/18 at 1:41:26 pm		
bpm	70	chicken_turkey	10/16/18 at 1:41:25 pm		
hook-response/bpm/0	216	particle-internal	10/16/18 at 1:41:05 pm		

Field 1 Chart



pulseIoT



ThingSpeak.com