Stress detector Glove for light biofeedback

User manual

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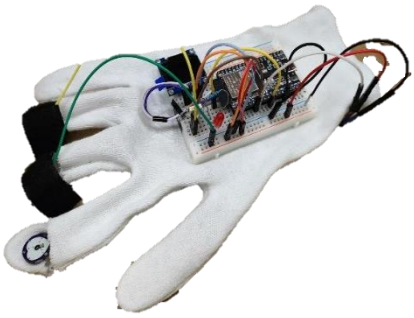
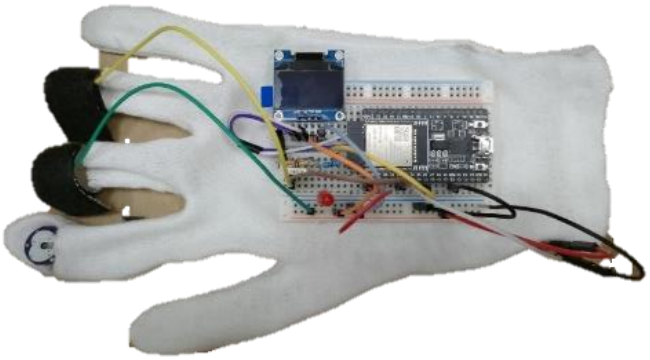




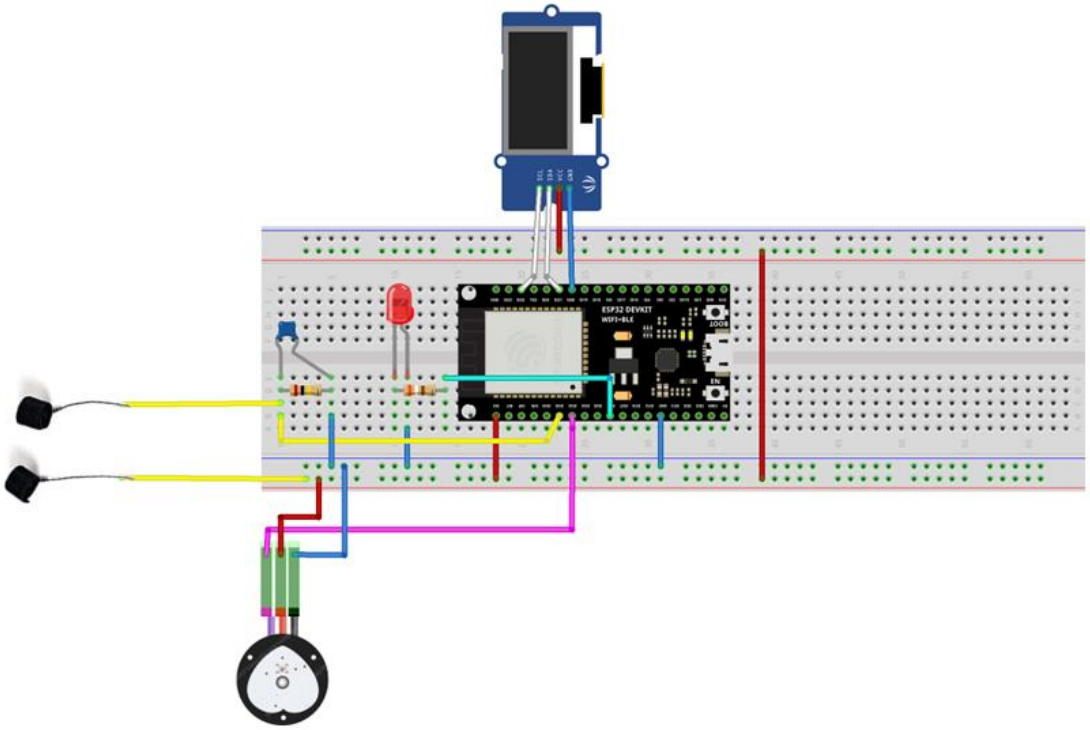
1.Introduction

The product is a **sensorized glove** that detects stress using 2 sensors (**GSR** and **HR**).

Comparing the **monitored signals** to the thresholds computing in the **calibration part**, it allows to determine the amount of stress of a person. It is shown by a led light that provide **visual feedback**. This is a well-known approach for stress awareness and management.

Moreover, collected data are sent to a server that allows a remote monitoring of the subject. Data are visualized in a **dashboard**.

2.Electric scheme



3.Sensors

GSR sensor gives the value of skin resistance indicative of the humidity level of the skin. Stress generates a **galvanic response** that increase the sweating, causing the decreasing of skin resistance.

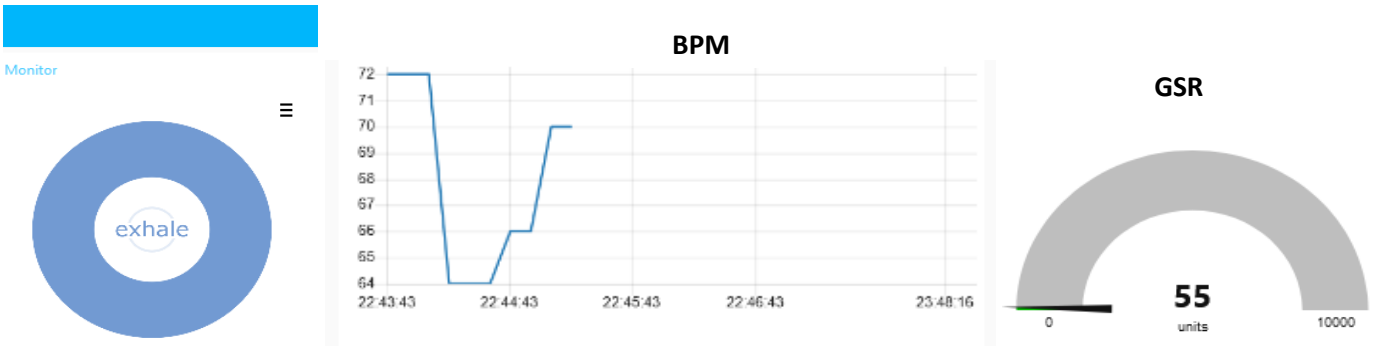
HR sensor measures a tension proportional to the light received by the phototransistor. It depends on light quantity absorbed by the finger. So, every heartbeat is indicated by a peak in the voltage measured. A **peak detection** algorithm allows the estimation of the heart rate.

4.How to use the device

- Wear the glove.
- Connect alimentation.
- Follow the instruction showed on the display for the calibration
  1. **Relaxation task** (2 min) in which the subject has to focus on a specific breath-sequence (**4in-6out**). This is nearby the resonance frequency that allows an activation of the parasympathetic system.
  2. **Rest period** (1 min) in which the subject must behave in a normal way. It's useful to not make the first and last task influence each other.
  3. **Stress inducing task** (2 min) in which the subject has to do a stressing task. You can do whatever stress you: we focus on 2 tasks: 1 Stroop-test, 2 math calculations.
- After calibration it becomes a **monitoring system** that provides you feedback through the led.

5.IoT

To **visualize** the stress level in real time it's implemented an online dashboard on node-red. It also shows the **breathing exercise** used in the relaxation task but also useful to reduce stress in the controlling period.



Breathing exercise