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BURNOUT STATUS IDENTIFICATION AND ALARMING SYSTEM

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ABSTRACT

The object of the invention is a two devices system: a wearable device for identifying and alarming the occurrence of the burnout state and a device for setting/reading as follows: setting the initial data by the specialist as result of the state assessment and reading the data measured by the wearable device also by the specialist. The communication between the two devices is made through bidirectional visible light-spectrum communication (VLC). The wearable device is equipped with sensors for reading the physiological parameters (pulse and oximetry). The setting/reading device is a bidirectional translator between the USB protocol and the VLC protocol.

KEYWORDS

Burnout device,
Visible light communication,
Heart rate,
Oxymetry

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INTRODUCTION

The object of the invention is a system consisting of two devices: a wearable device for identifying and alarming the occurrence of the burnout state and a device for setting/reading as follows: setting the initial data by the specialist as result of the state assessment and reading the data measured by the wearable device also by the specialist. The communication between the two devices is made through bidirectional visible light-spectrum communication (VLC). The wearable device is equipped with sensors for reading the physiological parameters (pulse and oximetry). The setting/reading device is a bidirectional translator between the USB protocol and the VLC protocol.

RESULTS

System consisting of two devices: a wearable device for identifying / alarming the occurrence of the burnout state and a device for setting / reading the data by a specialist with a bidirectional visible-light communication (VLC) between them.

Wearable device for condition monitoring consisting of a microcontroller system (1) to which sensors for measuring physiological parameters are connected: pulse (S1), oxymetry (S2) and a real-time clock RTC (2), a flash memory (4), a programmable RGB LED (D1), a photodetector (6) and a reset button (B4), powered by a LI-Polymer battery (3), while the real-time clock RTC is powered by a separate battery (5).

Device for setting / reading data from the wearable device through VLC, and consisting of a microcontroller (1), a photodetector (2), a LED (3) and an USB port (4).

The interface with the specialist part, in which the data evaluated and measured by him are introduced, is the object of a PC application that has the component elements presented in the interface shown in figure.

The algorithm implemented in the wearable device performs continuous monitoring, reads the sensors values, performs the comparison with the values set by the specialist and according to these results evaluates and displays the state using the color code.

If there are no major changes, sensor readings can decrease in frequency, and if significant changes are detected the sensor readings will occur more frequently.

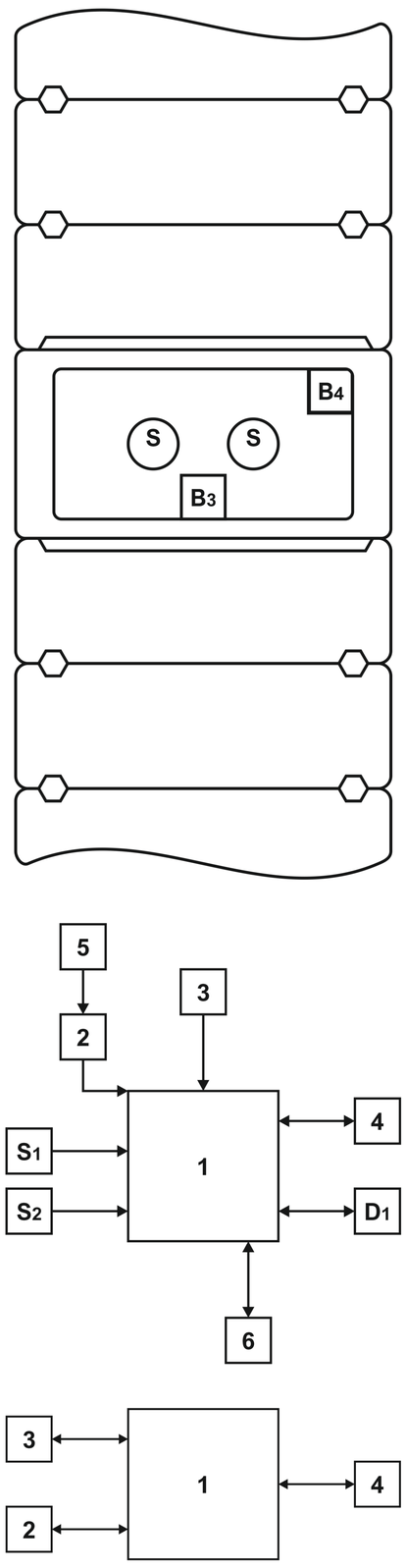

Figure 1. Hardware

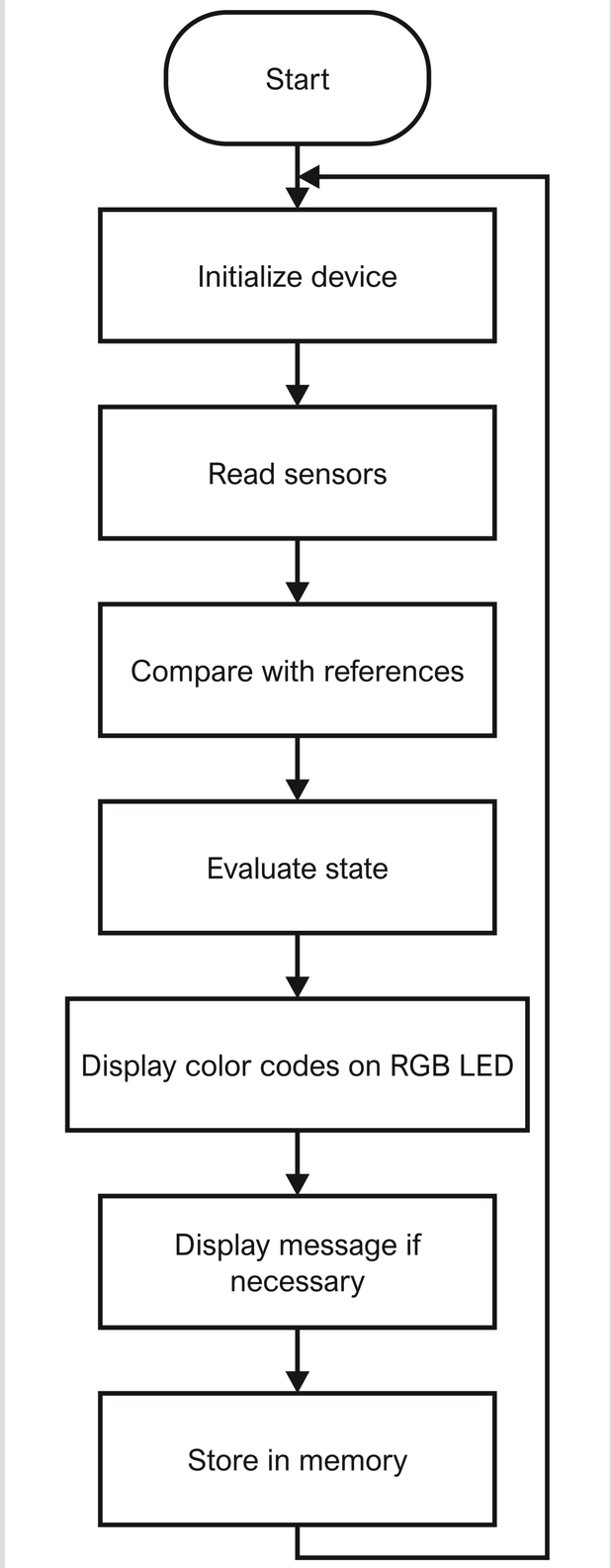

Figure 2. Algorithm

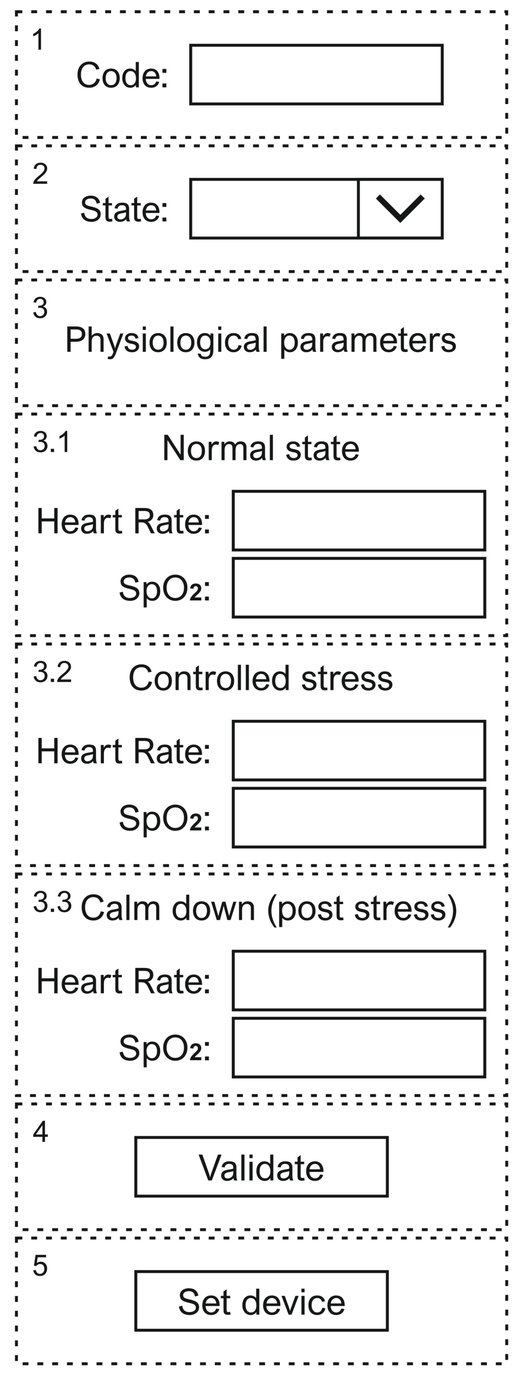

Figure 3. Software