MEDICAL **SMART BRACELET**
MONITORING SYSTEM FOR SENIORS

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The technological advances of our time allow us to make the innovations provided by machines facilitate health care and safety measures we take. These innovations can be utilized to protect the essential traditional values, such as the protection and care for our family and loved ones.

In the wake of the aging population in Western Europe, the role of the state and the social network in the care of the elderly is inevitably changing. The emphasis is shifting to self-care or care within the family, always keeping in mind our current – ever growing - opportunities.

TECHNOLOGY IN SERVICE OF OUR HEALTH

This new way of utilising technology for self-care can be incorporated into our day-to-day life, creating a safer and more convenient approach to health care.

Wearing miniature sensory assemblies can provide health monitoring methods that can be used to prevent problems, thus providing a much greater sense of security to people. In terms of self-care, this means that families can buy tools for older parents, grandparents, that are constantly monitoring the health status of the elderly and signaling in time before a health problem occurs. This observation method provides a reassuring feeling not only to the users, but to the whole family.

OM WRISTBAND

We offer a wearable, clinically certified device for home monitoring, which, due to its advanced third-generation technology, not only measures signals, but it also capable of self-evaluation and prevention risk analysis. This means that even non-professionals can securely purchase the device and service for their elderly relatives as the system monitors and calculates all health parameters for them and notifies them of important medical changes.

The OM bracelet uses our own built-in hardware for monitoring, which includes regular ECG measurement, including blood pressure, pulse, temperature, and skin resistance measurement. A huge amount of medical data is piled up from our measurements, collected by our medical Big Data system and analyzed by algorithms specifically created for this purpose.

With nearly 50 special algorithms we analyze the collected signals from which predictions are made to prevent severe heart problems such as stroke or sudden cardiac death.

The signals are transmitted to a central evaluation system where real-time analysis and evaluation are performed.

In the event of a complaint or a risk of concern, the system will automatically alert a designated specialist who can oversee and override the system's suggestion. The analytical program is constantly learning and developing, which makes it more and more accurate, thus expanding the list of recognizable pathological conditions.

FEATURES

One of the most innovative solutions of the OM MEDICAL SMART BRACELET wristband is the miniature ECG technology that detects clinically accurate signals, which can be used to monitor patient cardiologic values.

- Filtered ECG signal measurement (from which Poincaré plot, RR Histograms, Averaged Majority Cycles, QRS width, QTc, R amplitude, ST, T wave max, P waveform bimodal, P waveform negative, P waveform unimodal, P waveform positive, LF, HF)
- Measurement of blood pressure
- PPG heart rate measurement
- Temperature measurement
- VT / VF risk analysis
- AF risk analysis
- HR, HRV, HRmax, HRavg, HRrest
- Stress measurement
- Fall detection
- EDA (skin resistance measurement)
- High capacity battery, LED indicator
- Panic button

Massive amounts of medical data are collected by our medical Big Data system and analyzed by algorithms specifically created for this purpose. With nearly 50 special algorithms we analyze the collected signals from which we prepare predictions to prevent severe heart problems such as stroke or sudden cardiac death. The signals are transmitted to a central evaluation system where real-time analysis and evaluation are performed. In the event of a change or a risk of concern, the system will automatically alert the selected user and makes recommendations on the best solution. The analytical program is an artificial intelligence that is continually learning and evolving, making it more and more accurate, thus expanding the list of recognizable pathological conditions. In the event of a fall or a panic call, the designated family member will be notified of what has happened.

NB-IOT

The product family is capable of communicating with the central system using NB-IoT technology in accordance with the latest communication methods. The advantage is that the data transfer speed will be much faster and that the continuous data connection can also occur in indoor areas where signal deterioration is a concern otherwise. NB-IoT technology is reliable, inexpensive and capable of establishing the uninterrupted communications link required to maintain a reliable remote monitoring system.

Incorporating NB-IoT chips into wearable devices makes it possible to connect directly to the network without the need for an intermediate communication device (smartphone, indoor unit). This is a very important aspect of home observation for the elderly. This way, we can ensure a sense of security as the communication link is maintained in those interiors with deteriorated signal, which was previously unimaginable.

SERVICE PROVIDERS

The **OM** wristband is not just a tool but a service pack. Regular follow-up and health monitoring can work based on sales of service packages.

Besides the obvious selling of a device, customers will be inclined to sign long term contracts to benefit from additional services provided by this technology, making this innovation an opportunity worth looking into for mobile network providers. In recent years, due to the saturation of the market, it has been increasingly difficult for telecommunication companies to sell new SIM cards. By addressing existing customers, expansion can be easy for mobile network providers, as it is an instictual need for everyone to keep their loved ones safe.

TRANSMISSION VOLUME

With regard to bio-data, the (pre-proto) tool saves the following.

Sensors and sampling frequencies:

- ECG: 500Hz
- PPG (photoplethysmography): 100 Hz
- Accelerometric sensor: 100 Hz (3 axes = 3 channels)
- EDA (electro dermal activity): 100 Hz
- Temperature: 1 data / 10 sec (0.1 Hz)
- OnChip calculated Heart Rate: 1 data / sec

The sum of the above data is in binary (.m2m2) format: 0.256 Mb / min.

The final data volume is greatly influenced by the number of daily measurements, 3-10 measurements per day. The device performs 30-second measurements

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SYXOM