DEVICE AND PROCEDURE FOR DETECTING FALSE ALARMS IN A PERSONAL EMERGENCY SIGNALING DEVICE

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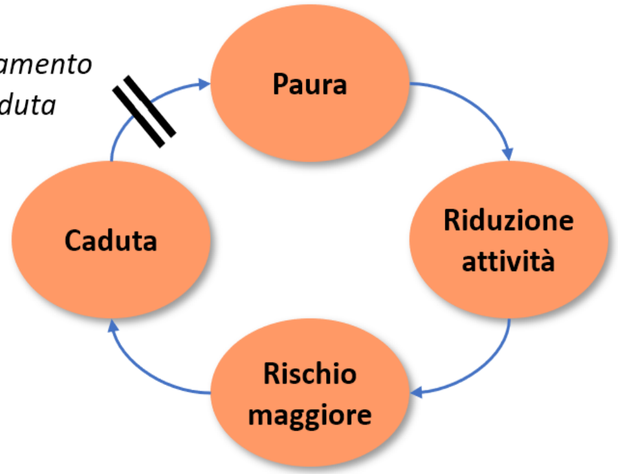
Invention

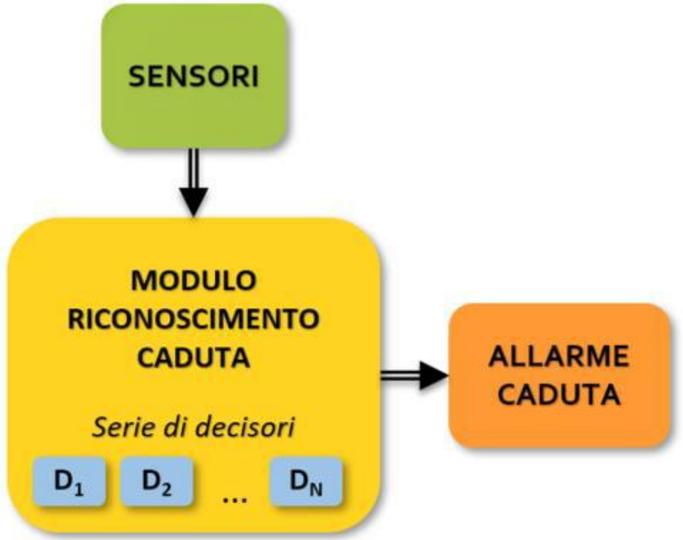
The proposed technology is a **system to recognize accidental falls reliably**. The procedure is based on **accelerometer data,** to which characteristic indexes of motor activities are applied. The system eliminates false alarms and reports **only events that cannot be attributed to normal daily activities**. **Low power consumption and simplicity** enable its implementation in non-invasive wearable devices of daily use.

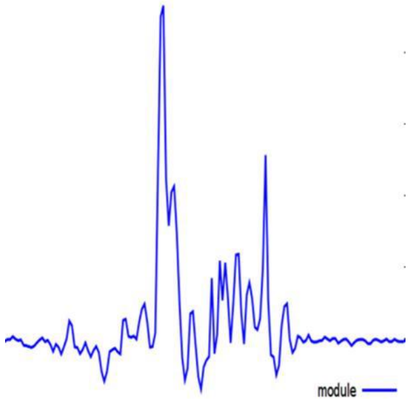
The system includes sensors capable of detecting the movement of a **user's body and a fall detection module**, able to eliminate false alarms due to normal everyday activities. The system detects **abnormal motion data** (e.g., acceleration) and relays it to a series of decision makers. Each decision maker evaluates whether the incoming data can be interpreted as characteristic of normal activity (false alarm) or not. If no decision maker reports a false alarm, the device reports the detection of a user fall.

Drawings
& pictures

Rilevamento caduta







Industrial applications

The proposed technology would benefit **companies active in digital-healthcare** for the manufacture of:

- wearable systems for **continuous indoor and outdoor monitoring** of individuals professionally exposed to fall risk;
- integration into r**emote care services of elderly people**;
- wearable systems for **monitoring fragile people** (e.g., frailty syndrome, Parkinson affected person);
- development of **personal healthcare applications** for smart devices.

Possible developments

The system is modular and configurable. In a particular configuration, the device is able to recognize and exclude, since these are false alarms, the act of sitting/laying down quickly on a soft surface, sitting on a hard surface, running, jumping. The system operates on the basis of **thresholds and indexes representative of everyday activities**, applied to the acceleration module.

The technology has **high sensitivity**, due to the ability to detect all true falls, and **high specificity**, excluding all false falls. It provides the ability to operate with only one accelerometer; **the algorithm is simple**, implementable on board, and does not need to communicate data externally; it also works at **low power consumption**.

The research team is interested in collaborating with industrial partners and considering licensing or transferring the patented invention for commercialization by interested companies.

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