Services for Health Care

Task

Changes in people's behaviour when living alone at old age or with any other health conditions can be can cause a lower well-being in every day's life. Thanks to KNX, the respective persons can benefit from smart home technology, thanks to sensors that can be used to detect and assess changes in behaviour.

Solution

The project presented here records the data flow from the building sensors, gets to learn about the normal behaviour of the house residents over several weeks and then determines deviations from normal behaviour. On the basis of the sensor data collected by the system and the degree of deviation from the „normal state", it can be assessed whether a person, who is living alone, is doing as always or whether changes - e.g. due to deterioration in health - can be recognised. Regardless of the amount and types of sensors (light switches, motion detectors, window contacts, etc.) that are in use, the system learns the „normal state" from the existing sensors. The resident does not notice anything when the system is learning, because it is a „side effect" of the actual house network. In addition, the single person does not get the feeling of being old, sick or dependent, as he does not have to buy a special „health monitoring system", but uses the sensors for the building services.

Realisierung

The information flow of a KNX house bus system with its system devices, sensors and actuators serves as the basis for pattern recognition. A mini-PC preconfigured for the house bus system is connected via the house bus system to the home network via LAN in order to categorise data telegrams based on their transmission and useful information and to process them using software-supported algorithms. Activities are stored internally through sensor detection. On the basis of correlated influencing factors such as time, frequency and grouped occurrence of data values, data are calculated with statistical heuristics and finally weighted and evaluated on the basis of a regular daily routine.

Devices used

- JUNG
- KNX IP router Steinel
- KNX presence detector Elsner
- KNX VOC sensor MDT
- KNX glass push button ioBroker
- Building logic Huawei
- Smartwatch GT2 Medtronic
- Blood glucose meter

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