Zürcher Hochschule
für Angewandte Wissenschaften

School of
Engineering

IEFE Institut für Energiesysteme
und Fluid-Engineering

Emergency recognition through power and water monitor

Initial conditions

The percentage of elderly people increases every year, as does the number of chronically ill individuals. The risk of accidents (falling, dizzy spells, etc.) also increases as people get older. Elderly people desire to remain in their familiar surroundings for as long as possible. Affected individuals and their families wish for more safety for older people who live alone. The handling of new technologies, as well as signaling and monitoring systems is complicated and difficult for the elderly. An inconspicuous and automatic "guardian angel" in the background can provide more safety (Fig. 1). It circumvents forgetting or wrongful operation, or inhibitions regarding triggering the alarm, as is the case for traditional alarm systems.

Figure 1: Foundational concept, daily activity is established based on precise measurements

Approaches

Actions of everyday life are reflected in energy consumption as recognisable patterns (Fig. 2). An person's everyday life is marked by a certain level of routine; if this changes, so does energy consumption. Energy consumption makes it possible to draw conclusions about an individual's daily routines and therefore his or her health. Changes can be the result of acute emergencies (e.g. fall) or worsening disease (e.g. dementia). The prerequisites for this are precise measurements of the household's power and water consumption. Power can be measured centrally in a relatively uncomplicated manner (Fig. 3). High-resolution counters are developed for water consumption, which take measurements on each tapping point (Fig. 3).

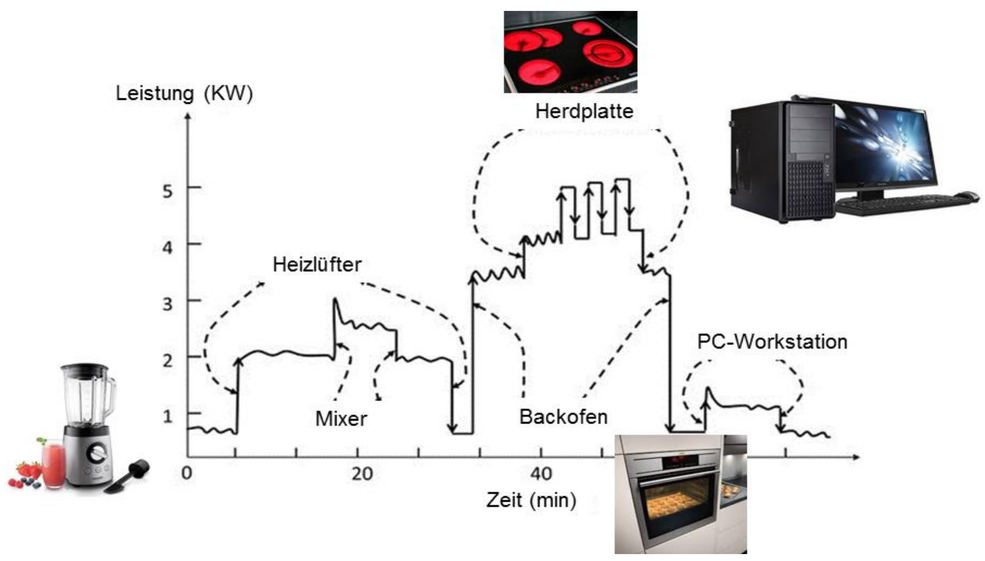

Figure 2: Assignment of power patterns to concrete devices, which in turn are connected to specific activities

Research goal

The center of the project is an automatic algorithm-based evaluation of the water and power consumption data, the establishment of activities and the recognition of the person's state of health using an appropriate alarm.

Figure 3: water meter on the left, power meter on the right. Both devices measure the electric power and water consumption.

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