E. Campo, S. Bonhomme, M. Chan, D. Esteve. Help to monitoring of elderly by using physical activities criteria. Gerontechnology 2008; 7(2):84. This article presents the deployment of a continuous monitoring system for the elderly. The persons concerned live in a nursing home in rural areas. This study is part of a national experiment using satellite communication links for remote monitoring. After a brief description of the infrastructure, the paper exposes the first results obtained by the activity of a subject through learning of his lifestyle. Some time slots are highlighted in which normality thresholds of normal behavior are defined. The excess of these thresholds allows reporting a deviant behavior or a high risk situation for the subject. **Methods** The objective is to ensure a remote automated continuous monitoring. The main needs concern the behavior monitoring by follow up of actimetry, which is representative of the health status of individuals. For this reason, we have developed a system based on a wireless presence sensors network distributed in the living room of a subject in a nursing home[1]. These sensors are connected to a monitoring station to collect patient's motion in real-time. Processing algorithms based on statistical analysis allow modelling the usual behavior of the subject. These statistical analyses are based on past data from sensors and stored automatically. So, diagnosis of the situation can be established[2]. This central processing station is connected via a satellite link to a remote doctor in charge of collecting alarms and associated data from home or from his medical practice. The method of temporal activities classification uses a genetic algorithm combined with a descriptive statistical analysis that delivers temporal bands over the day that characterize the lifestyle of the user. This initial classification of temporal habits makes it possible to calculate, for each time of a day and every area of the room[3], estimators corresponding to the different criteria. These criteria are used by the system to serve as a reference for help to medical diagnosis and incidents detection. **Results and discussion** Two kinds of results have been obtained in this work. The first is to validate the real time remote monitoring from the doctor's computer: patient's activities, video link between the institution and the doctor, receiving alarms when detected by the central PC. The second result is a description of the normal activities of the patient from statistical analysis of data collected over the last 15 days. Several criteria were used: the relative speed, distance covered, time spent by area, duration of immobility by area, agitation, potential or proven fall. These criteria are used as indicators of the physical condition of the person. Here we present some results showing the current situation in relation to past situation and thresholds defined. Any excess comparing to thresholds gives an alarm to the staff. This alarm is shown on a GUI under visual, sound and textual form. The expertise of medical staff helps to corroborate these results.

References

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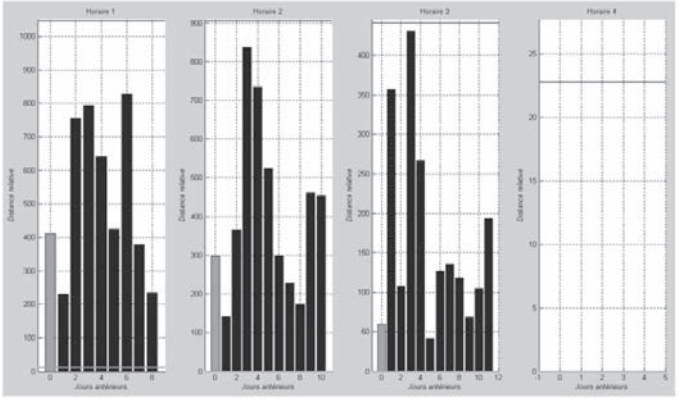

Figure 1 Example of evolution of the distance covered over time bands