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Interactive Living Activity Monitoring System using Sensors Information with Raspberry Pi

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Abstract: A system is proposed for monitoring and prompting elderly individuals living alone. The proposed framework utilizes a microcontroller with sensors to gather data in a room of the place of elderly individuals. It identifies a slow difference in exercises from the estimation data. In view of an investigation of measured data, warnings and exhortation are sent to the elderly individuals and their family with the point of keeping up the great physical state of the elderly individuals and urging them to perform wellbeing mindful exercises.

Keywords: Sensor network, Daily-life activities.

I. INTRODUCTION

Lately, the expanding number of elderly individuals, especially those living alone and separated from whatever remains of their family, has turned into a difficult issue. Monitoring those individuals is viable however troublesome and a weight on their family [2]. Major circumstances, including perilous ones, frequently happen because of this issue. This issue can be comprehended by having the family monitor the wellbeing state of their elderly relatives. As a methods for monitoring wellbeing conditions from a remote area, an IT-based framework is a critical hopeful. Moreover, it can screen wellbeing conditions as well as give exhortation (as wellbeing mindful data) to elderly individuals. This system collects data via several kinds of sensors. The collected data is analyzed in a cloud server to learn activities of daily living. It detects a gradual behavior from a learning pattern and measurement data. For example, changes in getting up time and going-out patterns are monitored. In the case a change is detected, the system notifies the family in question that the behavior of their elderly family member has changed, and it will also advise the family to check a condition of that member.

II. EXISTING SYSTEM

With the downsizing of the recent sensors and micro-computers, monitoring systems for elderly people have become a reality [1]. As a result, many products and systems have been developed for the purpose of monitoring elderly people. However, most of them aim to confirm that a person is alive. For example, one system detects the usage of an electric kettle [9]. Another detects an elderly person falling by monitoring their behavior [10]. As for these systems, it is a problem that it is already too late to prevent a problem at the time of detection (e.g., the person may have died or be in a critical condition).

III. PROPOSED SYSTEM

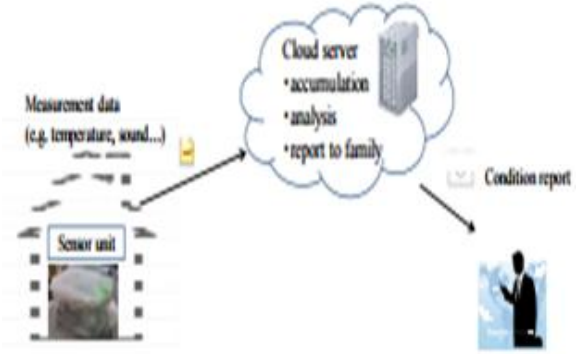


Fig1. Overview of proposed system

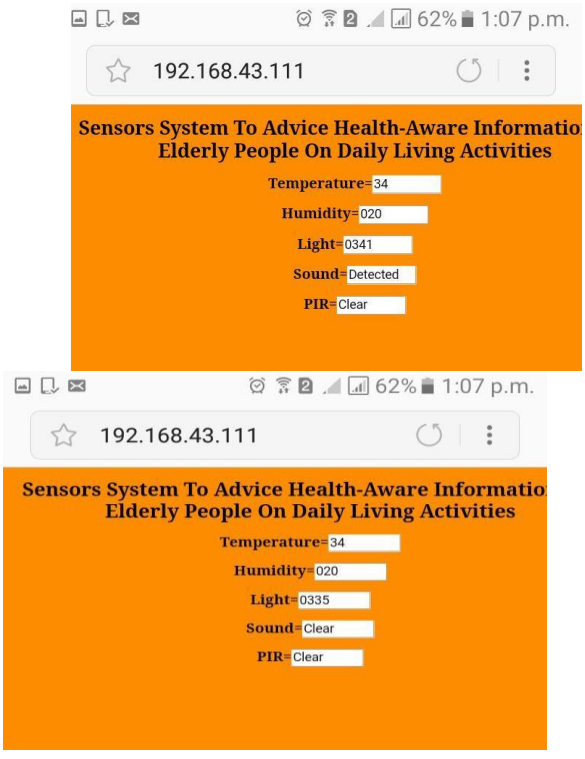
Fig2. Experimental setup.

An overview of the proposed monitoring and advising system for elderly people is shown in Figure 1. The system provides assistance for elderly people to help them live a healthy life. The assistance is given by monitoring the daily life activities of elderly people. The system is composed of a sensor unit and a control unit. The sensor unit collects data, which is accumulated and analyzed in the cloud server. The sensor unit is overviewed in Figure 2. It is installed in one room of the house of an elderly. After installation, the data measured by the sensor unit is automatically collected and

sent to the client via the Internet. The data is accessed via the Internet. It saves the data received from the sensor unit in a database. The stored data is used to learn life-style patterns and determine the condition of the elderly people. In addition, the cloud server notifies the family of the elderly person when patterns other than steady conditions are detected. Different sorts of sensors and the planned uses are recorded. The sensor unit records the day by day life exercises of the elderly individuals by utilizing these sensors. The sensors can be separated into two gatherings. The primary contains ecological sensors for catching changes in an indoor situation. The second contains human sensors for straightforwardly catching the conduct of elderly individuals. The sensor unit measures these components consistently.

The environment sensors are used for estimating the status of air-conditioning equipment, windows, etc. and detecting changes in brightness of the room. For example, temperature and humidity can be used to estimate the status of air-conditioning equipment and windows (i.e., open or closed). Brightness can be used to estimate the status of indoor electric lights (i.e., "on" or "off"). Air pressure can predict a change in the weather. The environment sensors are also used to detect changes in a person's usual behavior pattern. An example of a different pattern is the case that an elderly person is in bed all day with a cold. In such a case, indoor temperature and humidity show a change from the normal days. The PIR sensors are used to estimate a person's movement and continuing presence in a room. An example of the status to be detected is watching television. The sound of the television in a room can be used to estimate that a television is being watched in that room. The infrared motion detector can be used to estimate the motion status of the elderly people.

IV.RESULTS



V. CONCLUSION

A monitoring and advice-giving system based on daily life activities for the elderly people was proposed and experimentally evaluated. The proposed system uses a combination of sensors with a microcontroller using IOT . To collect data in the house of elderly persons, a sensor unit was configured and installed in the house of an elderly couple. A method for detecting the activity patterns of the elderly couple was proposed and experimentally evaluated by using the data collected in that house.

VI. REFERENCES

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