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Really intelligent homes

Have been great advances in the field of home automation in recent years, already possible to issue control orders of the elements of housing in many different ways: from the typical remote controls designed by each manufacturer, to the universal use of Touch screen Pc, tablet, or smart phones. Or via voice, by wireless microphones or using microÂ´s mobile phones. And of course the possibility to do it from home or from anywhere in the world through internet.

IP cameras are being incorporated rapidly into the smart homes, allowing us to see the status of the house while we are interacting with them from outside, or have a look to our home when we are alerted by an alarm activation.

Whatever the hardware system used to control home automation elements, x10, Zigbee, ZWave, bus Â® EIB, etc.. We think that there is little way to go if we only think about improving the way we give control orders and we need to extend the vision that so far we have of home automation. If the house were really smart need to give it orders?

Is it possible that our home automation system knows at all times if we want the light on, the blinds down, or heating to 23 degrees? At present, it doesnÂ´t seem a simple issue, but we have some tools that can approach us to this goal.

Let's see what these tools are:

Schedules. With schedules we can set the time on and off of the automation components. For example, air conditioners, irrigation, outdoor lights, shutters, awnings, etc. This is a tool available at any home automation system and useful for our goal of a really intelligent home.

PIR detections. The detections of presence-based on PIR, introduce a second element of control, yet they have the problem that the detection of presence no spatial boundaries affecting the entire stay, therefore cannot be more than one detection area in a stay.

Presence detections of Ip cameras. Presence detection of IP cameras can be a key to control a home automation. They have the advantage of being able to establish small areas associated with each element, been possible to define multiple detection areas on the image of a camera. For example, in a camera installed in the dining room we set a detection area to control the light from the table, another one to control the light from the sofa, a third for the light reading chair, desk light, curtains, kitchen light, etc.

So we have a useful tool for automatic control elements, depending on whether or not presence is found in areas associated with them. Moreover, these orders were conditioned to schedules or state of other elements. For example; It will turn light on if presence detection is activated during day and blind is lowered.

To configure the commands associated with presence detections we have divided the orders into two categories: non-detection and detection orders

Orders for non-detection presence will be very simple to deploy and 100% reliable. When the camera doesnÂ´t detect ipresence in the area for a specified time set by the user, It will turn off the

lights, go down the blinds, TV, or heater. Any false dtection just will cause a not important delay issuing orders. Because logically, 50% of orders in a house will be off, we have achieved a house half-intelligent. Keep in mind that approximately 10% of electricity consumption in a home is because forgetfulness turning off electrical devices.

Orders for presence detection will be more complicated to implement, due to the problem of false detections caused by unexpected changes in pixels, as it could be the turn on or off of another light located in the same room, or the passage of a person very close to the camera lens that will prevent us differentiate between the different detection areas.

To solve the first problem we need a powerful camera that adapt the parameters of presence detection. So Axis cameras have the history parameter, that parameter set to minimum, allows us to eliminate sudden but short changes in image, preventing us false presence detections.

To solve the second problem , we create a subroutine in the camera that only considers presence detection two separate motion detection in less than a few seconds, making the passage of a person do not activate the presence detection and will need to the person moves into the area for at least X seconds.

Finally it is recommended that whenever we activate an item for presence detection, configure the opposite order not to presence detection to avoid checked items longer than necessary.

To set up orders must ask three questions.

â€¢ Sensing area.

â€¢ At what time

â€¢ State other elements.

Of course there always will be a 20 or 30% of orders that the system may not be able to figure out, say that states would be no logical or expected.

We conducted several tests with the software "alhena" installing an Axis M3014 camera with wide angle of 80 degrees in a loft, dining-kitchen. And a camera Axis M-1031 on the terrace.

Control elements were as follows:

DINING-KITCHEN

- Light dining table.

- Light kitchen table.

- Light kitchen countertop.

- Light sink.

- Light reading chair.

- Heating

- Cortina.

- Shutter.

- Television

TERRACE.

- Light terrace environment.

- Light table terrace.

- Awning.

- Shutter.

To verify the effectiveness of our system, we compared the performance of the home for a week without intelligent control and with intelligent control, and chose as an indicator the number of non-automatic orders issued, either by switch or by home automation commands.

The result was dramatic, the orders issued on a non-intelligent way decreased by 66.8%, reducing the human intervention to get the right climate to 33.2%.

If the reader wants to do some tests, download the free version of the software â€œalhenaâ€• at the address listed below and we would welcome your comments.

As always the first step is the easiest to give. But is it possible to reduce the remaining 33%. ? What ways may be opened with new technological developments?. We will see some ideas in the next article.

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