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Vesceral Control on Electric Gadgets by Smartphones for Smart Abode Environment

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ABSTRACT

Recently, many industries have developed many applications in order to control the electric devices by users through smart phones via wireless links. The main disadvantage of these developed applications is that the users must switch between the APPs to control the electronic devices. Here, we use individual applications for each electronic device. In this paper, we are developing a single android application to control the electric devices using smart phone. Here, when a user raises her smart phone and point a device, automatically the control panel of that particular device pops out, further, we can control the device. In a smart home, electric devices such as plugs, televisions, lights, and air conditioners will be controlled using wireless communication capabilities (e.g., Wi-Fi, Bluetooth, or ZigBee).With the progress of smart phones and internet there are more new products available in the market that allow users to use smart phones as remote controllers. Existing smart home remote controllers require users to traverse device lists to find the right ones that they wish to control. This control fashion is the most effective way of controlling home or industrial appliances. There are two simple ways .They are usage of commercial smart phones which has infrared modules and the other is to derive the relative locations between smart phones and electric devices.

1. INTRODUCTION

Generally the electric devices are authorized to connect to the internet and the users can also control them through webpages. The other hitch is that, the user need to switch between the APPs to control the various devices. This control fashion can be considered as most instinctive one. The user can control the particular electric device by pointing the smart phone to it, so that the control panel pops out automatically. Here, we recommend some schemes to assist intuitive device control for smart home environment. There are three kinds of components called remote controller, actuator and also gateway. Additionally, we use multiple actuator .Mainly, the gate way is used to assist management and control the actuators. Actuators are those controllable devices or electronic appliances. We consider both remote controllers and actuators have in built accelerometers and magnetic sensors. To reach the way of intuitive control, we introduce three schemes for the actuator, gateway and remote controllers. To analyze with the problems, the placement of actuators will not be paralleled with the horizontal plane, such that each actuators are used. After collecting the direction information the gateway identifies the relative locations and orientations. Next to this after acquiring the required information from the gateway, the remote controller uses the introduced matching schemes. The user can specify the control commands via remote controllers through user interface, the implementation results in the demonstration of effectiveness of the design.

2. LITERATURE SURVEY

In this section**,** we first introduce various kinds of systems that are already existing to control home appliances such as Philips Hue lighting system [3] and the Aros air conditioning system. The controlling fashion that are used are control flash-icons, named automatic control, remote control, and Smartphone control, for smart home environments.

2.1 Aros Smart Window Air Conditioner

Quirky and giant GE have teamed up to introduce the Aros Smart Window Air Conditioner, to keep the electric bills under control. This system works by when the whole setup gets completed, user can control settings on the window unit using the free WINK Smartphone app. User can adjust temperature higher or lower.

2.2 Philips Hue Lighting System

Philips Hue is an LED lighting system, but it comes only with bulbs, a bridge that helps you control the lights and a Smartphone app where the controlling happens. The Hue bulbs are regular LEDs, but need an adapter holder. The user just needs to download the Philips Hue app on their iOS or Android Smartphone. Thus all the Hue bulbs in your house will show up in the app.

2.3 Smarty Ring

The smarty ring is a new bit of Bluetooth jewelry that works as a Smartphone notifier on your finger. A ring is a lot smaller than a smart watch. The ring features a small LED display with a variety of functions. It connects to your Smartphone giving alerts for incoming calls. The system is also water-proof. With a 24 hour battery, the smarty ring offers enough power to last 1-2 days, depending on use.

2.4 Switchmate

Switchmate makes the home lighting smart without any changes to the wiring system. It's a block of plastic with a servo motor, a Bluetooth Low Energy radio, and a couple of magnets on the inside, and a simple button on the outside.

3. RELATED WORKS

A) Automatic Control in Smart Homes

Reference [12] presents a ZigBee-based self-adjusting system to help home automation. Here ZigBee sensor nodes are used and they are used to collect environment attributes. Reference [15] introduces a scheme to adjust light illuminations according to user's choices. Reference [23] presents a method to reduce electric bills for the residents so that they are satisfied. This is achieved by using the principle that the system will automatically turn off unused appliances if the used power exceeds a threshold during a specific period. Reference [14] proposes an architecture in which a mobile agent can handle and arrange all tasks of a user by communicating with devices in the system.

Drawbacks: But, the critical issue with these systems is that the above system cannot get rid of interactions between users and the control system, i.e., users need to fine tune control results by smartphones or by some feedback mechanisms.

B) Remote Control in Smart Homes

Reference [10] presents a smart home system design, to control smart home devices to control home devices through a web page. Here the PLC (Programmable Logic Controller) will control the corresponding home device. Web services include social network sites (e.g., Facebook or Twitter). In reference [13], the touch screens in mobile phones are connected to an ARM- based gateway through 3G wireless link. Then, the gateway relays the received commands to the target device by ZigBee wireless links. In reference [27-32] authors discuss how to build an energy aware home by utilizing the designed outlets to monitor appliances' energy consumptions.

Drawbacks: When there are many controllable devices in the environment, users take time to traverse lists to find the exact devices that they need to control.

C) Smartphone Control in Smart Homes

In reference [18], the authors implement a home gateway by an Arduino platform. Users can use a smartphone APP to control devices by connecting to the gateway through the Internet or Bluetooth. A smartphone can follow the design association to connect to a device, and then send control commands.

Drawbacks: We can clearly see that the above works only simply use smartphones as interfaces for controlling devices, and they do not exhibit how to control devices in a more convenient fashion.

D) Localization and Multiple Target Tracking Schemes

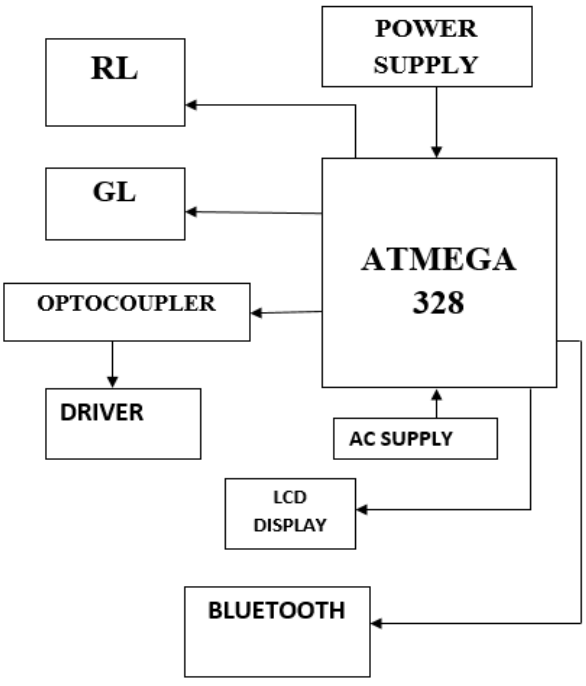
Reference [9] introduces an indoor localization system, which uses Wi-Fi APs that gets the received signal strength (RSS) in fixed locations to construct a radio map. Second, the system utilizes multi-dimensional search techniques to similar patterns in the constructed radio map and then to determine users' locations. In reference [17], if the observed RSS values are not similar to the ones collected, the localization accuracy will degrade. Reference [20] proposes a scheme which allows the system to self-calibrate its radio map. In reference [21], the proposed scheme identifies users by the RFIDs and tracks users by wireless load sensors. Reference [8] propose a multi-person localization scheme without requiring users to carry wireless devices. The proposed system can localize users via RF signal reflected by users' bodies. Reference [16] introduces a system, which utilizes two cameras for top view and side view, the captured feature are translated to 3D pointing directions.

Drawbacks: But, these schemes need special hardwares (i.e., load sensors, directional antennas, and high resolution cameras). Also, it is not easy for untrained users to deploy the above systems in their homes.

3. PROPOSED SYSTEM

In this paper, we propose schemes to support intuitive device control for smart home environments. There important components are remote controller, actuator and gateway. The gateway is used to support management on actuators. A remote controller is the Smartphone carried by a user. Actuators are those controllable electric devices. Users need not perform complicated setting procedures on devices. The proposed system can be integrated with existing system and users can use the IP- based solutions to control the devices when they are not at home. By the proposed placement decision scheme and orientation derivation scheme, users can move applications arbitrarily, and the system can infer the new locations of the moved appliances easily. And by the proposed matching scheme, users can easily control devices by directing their Smartphones to these devices. This can reduce device list traversal times. The proposed systems can be easily ported to wearable devices such as smart watches or smart rings. It can also be applied in exhibition rooms, classrooms, factories, and so on.

4. OUTPUT



5. CONCLUSION

In this project design, we propose a scheme for controlling the smart home devices using smartphone for users. To achieve intuitive control, we design two schemes namely placement decision and an orientation derivation scheme. Then with the usage of proposed matching scheme, we judge if a smartphone is pointing to some actuators. And then a user can easily control their home appliances. We conduct simulations to verify results. Thus by our proposed scheme, users can easily control smart home devices by their smartphones.

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