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Project Proposal

PC Universal Remote Receiver

ETEC 471 – Morton

October 31, 2008
ABSTRACT

The PC Universal Remote Receiver is a USB device that allows the user to implement various PC functions via an existing remote control. The possible PC functions can range from basic video playback commands, such as play, stop and fast forward, to more complex functions, such as file navigation or program execution. The flexibility of this product allows the user to setup the remote, button by button, to perform the tasks desired. The PC Universal Remote Receiver ultimately turns an existing remote into a highly configurable home entertainment device.

DESCRIPTION

From a hardware point of view, the device is mainly an IR receiver capable of interpreting IR signals and converting them into digital values. On the software side, the received and digitized IR signals must be interpreted and decoded to the corresponding PC function. This is implemented by sending these values to the PC, interpreting them as a specific button press, and translating it into the appropriate key stroke to perform the desired operation. The easiest way to understand the operation is to think of the remote and receiver as a simple keyboard. When a specific key is pressed, that key is sent and interpreted by the computer. In this case, the button presses are linked, or mapped, to the single key stroke or key stroke combination that will perform the programmed operation. The following block diagram shows the basic process of receiving the signal to performing the operation.
The small amount of electronic components necessary should allow the total size of the product to be rather small. The device needs an unobstructed line-of-sight to the remote to operate effectively, and therefore needs to be placed in an open or elevated location where it is easily visible. The following shows an approximate size and setup of the device.

BENEFITS AND IMPACTS

The main purpose of this product is to add additional functionality to an existing remote. This is beneficial to all users, whether they have an existing PC remote or not. For those who do use a separate remote for PC functions, this product can replace their PC-only remote by adding the same functionality to an existing remote. For those who do not have a PC remote but would like that functionality, an existing remote can be used to interface with their PC via the PC Universal Remote Receiver.

The device is highly configurable since each key can be set to perform a specific operation. Therefore the device can be fully customized to meet the user’s individual preferences and requirements.

There are several cases where it is beneficial to both the user and the environment by using this product. The use of this device allows for fewer remotes and therefore less electronic waste like circuit boards, components, and especially batteries. Reducing the number of remotes
saves the user money spent on batteries and reduces the amount of hazardous chemicals and materials that are increasingly added to land-fills every year. Additionally, spare or old remotes can be used with this device when their counterpart devices break or are no longer useful.

**DEVELOPMENT AND DEMONSTRATION**

The product development will be done primarily in the ETEC 340 lab, where there is access to several development tools, such as the computers and software, as well as debugging and prototyping resources. Access to Cypress Evaluation boards, In Circuit Emulators, and software is also available.

The demonstration of the PC Universal Remote Receiver will include basic functionality as well as the product’s flexibility. A demonstration of the functionality will include connecting the device to a computer, either lab or personal, and demonstrating how to configure a remote and show that it can perform some basic and complex operations.