

St. Francis Institute of Technology
Department of Computer Engineering

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Subject: Human Machine Interaction

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Experiment No:- 6

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AIM : To redesign interfaces of home appliances

I - THEORY :

1. Describe a well designed screen.

A well-designed screen:

1. Reflects the capabilities, needs, and tasks of its users.
2. Is developed within the physical constraints imposed by the hardware on which it is displayed.
3. Effectively utilizes the capabilities of its controlling software.
4. Achieves the business objectives of the system for which it is designed.
5. To make an interface easy and pleasant to use, then, the goal in design is to:
 - a. Reduce visual work.
 - b. Reduce intellectual work.
 - c. Reduce memory work.
 - d. Reduce motor work.
 - e. Minimize or eliminate any burdens or instructions imposed by technology.

2. What is a good interface design?

Design must be Goal-Driven : One of the major practices of interaction design is that it is goal-driven design. Interaction designers therefore need to know how to build the customer insights into their design, regardless of whether or not they are personally conducting user research.

It must be Easy to Use : This is the bare minimum for any product. If your product lacks usability, it is obvious that no one will desire it. It is the ease with which someone uses your product to achieve their desired goal. Just like UX design, interaction design needs to consider the inherent usability of the interfaces to make the underlying system to comprehend and use.

The Interface must be Easily Learned : You need to design intuition and familiarity into every interface as users don't really remember all functions after using a product. In order to boil down complexity, you need to create consistency and predictability. A simple example is that when a designer uses a lightbox for some images and have others opening in a new tab. This breaks both consistency and predictability and would only confuse users, if not annoying them. You need to maintain consistency throughout the design to create predictability, which in turn improves learnability.

3. What is home appliance and its types?

Home Appliance: A home appliance, also referred to as a domestic appliance, an electric appliance or a household appliance is a machine which assists in household functions such as cooking, cleaning and food preservation.

Appliances are divided into three types:

- Small appliances
- Major appliances
- Consumer electronics

Small appliances - A small domestic appliance, also known as a small electric appliance or minor appliance or simply a small appliance, small domestic or small electric, is a portable or semi-

portable machine, generally used on table-tops, counter-tops or other platforms, to accomplish a household task. Examples include microwave ovens, toasters, humidifiers, food processors and coffeemakers.

Major appliances - A major appliance, also known as a large domestic appliance or large electric appliance or simply a large appliance, large domestic, or large electric, is a non- portable or semi-portable machine used for routine housekeeping tasks such as cooking, washing laundry, or food preservation. Examples include refrigerators, washing machines, air-conditioner, etc

Consumer electronics – Consumer electronics or home electronics are electronic (analog or digital) equipment intended for everyday use, typically in private homes. Consumer electronics includes devices used for entertainment, communications and recreation.

Examples includes TV, mobiles, laptops, etc

II - OBJECTIVE :

- To understand the trouble of interacting with machines.
- Redesign interfaces of home appliances like microwave oven, land-line phone.
- To show the bad design of the home appliances as well as the good design of the home appliances.

III - PROCEDURE :

1. First select the shape which we want to use from the menus.
2. Start dragging your mouse with simultaneously holding the left click and drag till the size required is reached.
3. You can hold shift key, to get straight lines.
4. You can use fill tool from the menus for filling up color shown in the color palette. You can change the colors by selecting the colors in the palette.

5. You can use the select tool to move a drawn object to a different location
6. Use the text tool with font options to write text in the tool.
7. You can save the image finally once drawing is completed.

IV - TOOL :

Tool used is Microsoft Paint . Microsoft Paint is a simple raster graphics editor that has been included with all versions of Microsoft Windows. The program opens and saves files in Windows bitmap, JPEG, GIF, PNG, and single-page TIFF formats. The program can be in color mode or two-color black-and-white, but there is no grayscale mode.

V - IMPLEMENTATION :

A) Bad design of Microwave oven

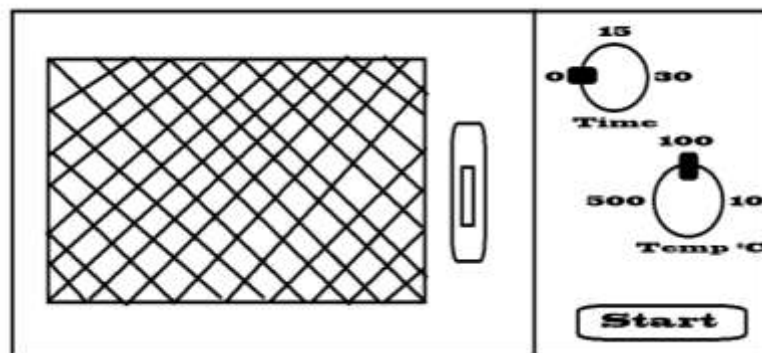


Figure 5.1 - Bad design of oven

Here, firstly there is no button to stop the process, user will have to think how to stop the oven. The Dials given for the time and temperature do not show the exact value, and the user will never know in this design if the timer is over or not.

B) Good design of Microwave oven

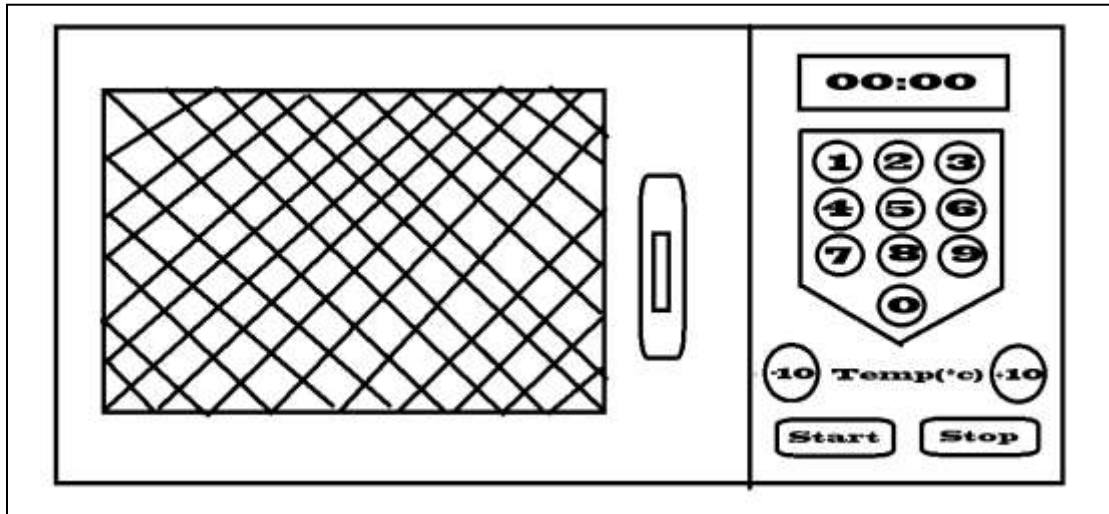


Figure 5.2 - Good design of oven

Here, firstly there is given button to stop the process, so user will have ease on how to stop the oven. The buttons given for the time and temperature show the exact value in the display, once start is clicked the timer countdown begins in the display and the user will know in this design if the timer is over or not.

C) Bad design of Telephone:

Below is the bad design of telephone.

The design is bad because, the user cannot see what he or she is dialing.

The user cannot redial a phone number directly, they will have to restart from and dial again.

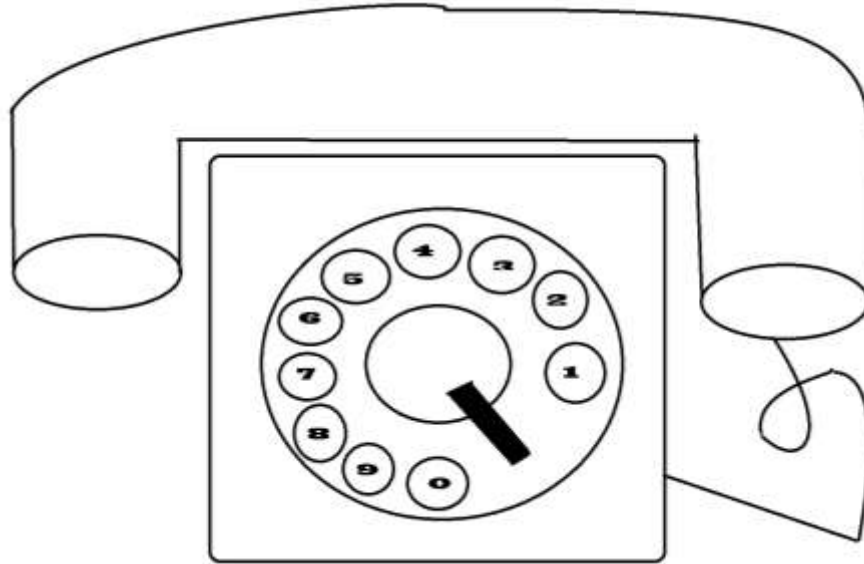


Figure 5.3 - Bad design of telephone

D) Good design of Telephone:

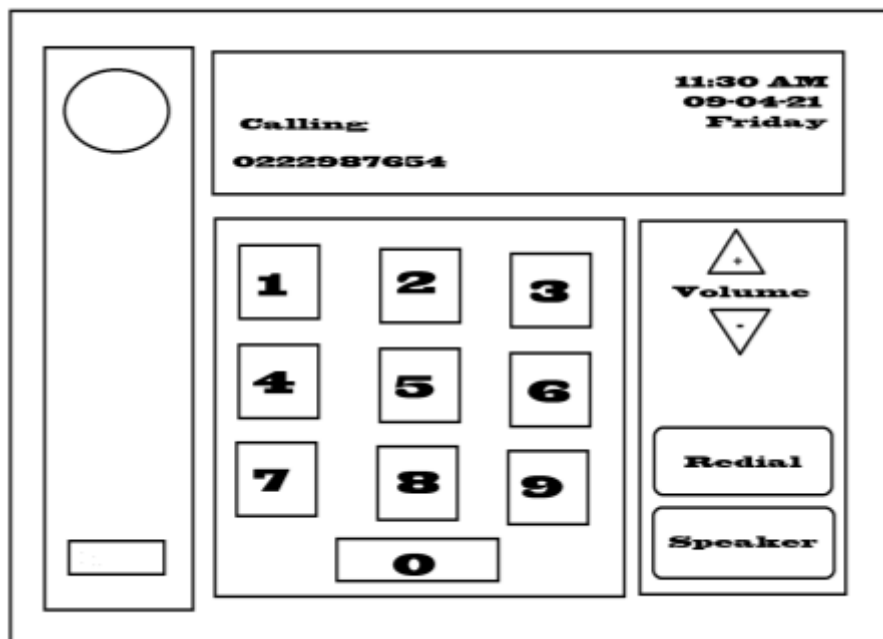


Figure 5.4 - Good design of telephone

Here, firstly we can dial numbers quickly whereas in the bad design we will have to take the number circle it till the block end. We have a easy display where we can see what we have typed,

we can also see who is calling us. We have an option to redial the number that we had entered before, we can also turn the phone into speaker mode and then adjust the volume of it. We can also see time , date and day which can be helpful at times.

VI - CONCLUSION :

From this experiment, we learnt about the design of home appliances. A well designed interface will give the end user ease to use the appliance. The interface will help to use the software systematically and on its full potential if that interface is designed well. A bad design will not allow the user to control the appliance properly. Finally we designed good and bad design for microwave and a telephone. We observed why the design was bad or good.

VII - POST LAB QUESTION ANSWERS :

1. What are Benefits of Good Design:

- Economic benefits
- Screens are less crowded
- Able to locate the desired information easily
- Positive effect of performance
- Employee satisfaction is increased

2. What is Response Time?

Response time is the time taken by a device to respond to a request. The request can be anything from a database query to loading a web page. The response time is the sum of the service time and wait time. Transmission time becomes a part of the response time when the response has to travel over a network.

In modern HCI devices, there are several applications installed and most of them function simultaneously or as per the user's usage. This makes a busier response time. All of that increase

in the response time is caused by increase in the wait time. The wait time is due to the running of the requests and the queue of requests following it. So, it is significant that the response time of a device is faster for which advanced processors are used in modern devices.

VIII - REFERENCES :

1. https://en.wikipedia.org/wiki/Microsoft_Paint
2. <https://usabilitygeek.com/5-characteristics-of-interaction-design/>
3. https://www.tutorialspoint.com/human_computer_interface/quick_guide.htm