Smart Television Control Using App/Website

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Abstract: People can watch Internet TV anywhere in the world as long as they are connected to Internet. The number of smartphone users has increased so rapidly that almost everybody carries one all the time. Smart TV applications are software applications that have been designed to run on smart TVs which are televisions with integrated internet features. Therefore we are trying to create an application through which we will control smart tv. This will happen in real time. While the world is adapting towards the internet in no time, these app will gain huge success because of the online content which is readily available for the user These applications will not only benefit for online content but for the educational purpose for which the student connect through the USB port for creating or watching any presentations. As this application can also benefit as a parental control for parents as it can control the consumption of the data to be watch by their children People can watch Internet TV anywhere in the world as long as they are connected to Internet. The number of smartphone users has increased so rapidly that almost everybody carries one all the time. Smart TV applications are software applications that have been designed to run. On smart TVs which are televisions with integrated internet features. Therefore, we are trying to create an application through which we will control smart tv. This will happen in real time. While the world is adapting towards the internet in no time, these app will gain huge success because of the online content which is readily available for the user. These applications will not only benefit for online content but for the educational purpose for which the student connect through the USB port for creating or watching any presentations. A smart TV provides a diverse set of contents from numerous sources through various applications (apps in short), and each app offers specific functionalities domain specific purposes and used by various viewers, such as children, senior citizens, and technical and nontechnical viewers. However, all types of viewers cannot use all the available apps. Moreover, each user's interaction and watching behavior are different due to age and gender differences, skills, viewing distance, interaction behavior, screen size, cultural values, and mental model.)e activities on a smart TV, such as watching content, viewing behavior, searching behavior, user interaction behaviors

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Index Terms – **Android, Remote, Television, IOT, App.**

I. INTRODUCTION

The global success of smartphones has been the beginning of the digitalization of electronic devices. TV is changing to a new concept of 'smart TV' in response to the market change, which was the media to convey the fun and information to people over a long time. TV was only one hardware dependent display for a long time and has been regarded as a symbol of old media that delivered video contents in one direction. However, the development of technology has enabled interactive communication, which has been known as a symbolic feature of new media. As viewers consuming video contents can use TV more actively, the concept of TV is changing. In particular, 'Smart TV' is a term has emerged to conceptually redefine TV. It can be seen as a concept that adds the features of smart media to the hardware characteristics of existing TVs. Since Smart TV has a display and is connected to the network, it has been evaluated as a media likely to evolve into smart media. Each manufacturer has launched various types of smart TVs to lead the market paradigm shift. But the market of TV is not simple. The main purpose of the traditional TV was to watch video contents. Unlike in the past, where expensive equipment and systems were required to produce video contents, now everyone can shoot and edit video, and the number of contents has increased sharply. Furthermore, it is possible to enjoy not only the video but also the contents of the application such as the game and the SNS on the TV. In order to watch the video contents transmitted in real time, both of the conditions, which is the time for transmitting the video and the space for the TV, had to be satisfied. Now, the distribution of VOD is generalized so that anyone can enjoy the contents at the desired time, and the appearance of personal media has freed viewers from spatial constraints. TV, which was on a monopolistic position as a platform for watching video content, is no longer a monopoly. The development of networks has opened up a ubiquitous era in which content can be enjoyed without a physical network. Users who use TV now are rarely used as a single device. People watch thousands of channels through set-top boxes, connect with personal media to enjoy content, and create content consuming experiences on the internet that are different from the past. TV was the only media for video content, but it is now used only as a display for connected devices.

Lee Jae-Hyun (2014) claimed that the media consisted of five layers. It is seen that each layer influences each other organically, with unit contents, media packaging, media platform, physical network, and media device. Today's TV has come to a situation where all the above five-layer elements are changing. It is clear that the paradigm shift is necessary. Many manufacturers have also introduced new TVs to meet these needs. However, these new strategies are still experimental. It can be the reason that each

manufacturer produces TVs with different interfaces each year. Therefore, this study aims to propose a new kind of interface for Smart TV based on this market change.

II. REVIEW OF LITERATURE

1. Smart TV Remote Control using Smartphone App: A Review (2017) by N. Chaudhary, et al. provides an overview of various approaches to control Smart TVs using smartphone apps. The paper discusses the advantages of using smartphones as remote controls and the challenges that may arise.

2. Design and Implementation of a Smartphone Application for Smart TV Remote Control (2019) by Shilbayeh and S. Al-Obeidat discusses the design and implementation of a smartphone application for Smart TV remote control. The paper also presents the user interface design and the features of the application.

3. An Overview of Smart TV and Smartphone Integration Techniques for Remote Control (2020) by Y. Huang, et al. provides an overview of different techniques for integrating Smart TV and smartphone for remote control. The paper also discusses the advantages and disadvantages of each technique.

4. A Review on Smartphone-Based Control Techniques for Smart TVs (2020) by S. Agrawal, et al. provides an overview of various smartphone-based control techniques for Smart TVs. The paper discusses the advantages and limitations of each technique.

5. Development of an Android App for Smart TV Control (2021) by R. Mustafa and N. Karim presents the design and implementation of an Android app for Smart TV control. The paper also discusses the features of the application and the challenges faced during the development process.

III. REPORT ON THE PRESENT INVESTIGATION

A. PROBLEM STATEMENT

Identification or in one sense some or the other time there are chances that the television cannot be under the control of the parents because the quality of content watched by their children is not controlled by them all the time, so in such instances either watching the television should be stopped or the parents should sit with their children to take measures to stop the content that they want their children to not watch.

There are many problems with the smart Tv itself where security can be a major issue and more importantly anyone can connect it through different application. There can be many issues with the traditional remote where there are battery issues, pairing issues, universal controlling, pairing issues, infrared sensor issues Terminals problem where the remote buttons are jammed or stuck so removing the batteries and cleaning it can be a major issue.

The use of Smart TV app control has become increasingly popular due to its convenience and ease of use. However, there are still some challenges that need to be addressed to ensure a seamless user experience. Some of the challenges include the need for standardized protocols for communication between Smart TVs and smartphones, compatibility issues between different Smart TV models and remote-control apps, and security concerns.

B. TECHNOLOGIES USED

Android

Android is a mobile operating system developed by Google. It is based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is the most popular mobile operating system in the world, powering more than 2.5 billion active devices. It offers a wide range of features and services, including Google Assistant, Google Maps, Gmail, and the Google Play Store, which provides access to a vast library of apps, games, and digital content. Android is known for its customizability, allowing users to modify the appearance and functionality of their devices. Additionally, Android has a thriving developer community, with many developers creating innovative apps and services that help to enhance the user experience.

Hardware COMPONENTS

Arduino uno R3: it is a standard board of Arduino. In this project Arduino will play an important role as it has 14 digital input/output pins (6 can be used as pwm outputs).
Specification:

1. The Operating Voltage of the Arduino is 5V
2. The recommended input voltage ranges from 7V to 12V
3. The i/p voltage (limit) is 6V to 20V
4. Digital input and output pins-14
5. Digital input & output pins (PWM)-6
6. Analog i/p pins are 6
7. DC Current for each I/O Pin is 20 mA
8. DC Current used for 3.3V Pin is 50 mA
9. Flash Memory -32 KB, and 0.5 KB memory is used by the boot loader
10. SRAM is 2 KB
11. EEPROM is 1 KB.

Wi-Fi module ESP8266: wi-fi microcontroller are used to send or receive data over wi-fi. Wi-fi modules are used for communication between devices.
Specifications

1. It is a powerful Wi-Fi module available in a compact size at a very low price.
2. It is based on the L106 RISC 32-bit microprocessor core and runs at 80 MHz
3. It requires only 3.3 Volts power supply
4. The current consumption is 100 m Amps
5. The maximum Input/Output (I/O) voltage is 3.6 Volts.

6. It consumes 100 mA current
7. The maximum Input/Output source current is 12 mA
8. The frequency of built-in low power 32-bit MCU is 80 MHz
9. The size of flash memory is 513 kb

Breadboard: It is used to build temporary circuits within the project.it is very useful because the components can be build and remove easily.

Uses:
A breadboard (sometimes called a plug block) is used for building temporary circuits. It is useful to designers because it allows components to be removed and replaced easily. It is useful to the person who wants to build a circuit to demonstrate its action, then to reuse the components in another circuit.

100 Ohm Resistor
Uses: 100-ohm resistors are often used in electronic circuits to control the current flow and protect other components from overloading. They can also be used to calibrate electronic components and as part of a voltage divider circuit

Other components include(male to male wires, female to male wires, ir blasters):
The difference between each is in the endpoint of the wire. Male ends have a pin protruding and can plug into things, while female ends do not but are also used for plugging. Moreover, a male connector is referred to as a plug and has a solid pin for center conduction male to male jumper wires: Male-to-male jumper wires are the most common and what you likely will use most often. When connecting two ports on a breadboard, a male-to-male wire is used. It is used to interconnect the components of a breadboard or other prototype or test circuit internally or with other equipment or components without soldering.

IV. RESULTS AND DISCUSSIONS

The use of Smart TV app control has become increasingly popular due to its convenience and ease of use. In this section, we will discuss the results of the literature survey and the various techniques used for Smart TV app control.

The reviewed papers highlighted the different approaches and techniques used for Smart TV app control. These approaches include using smartphones as remote controls, voice control, touch control, and gesture recognition. The use of smartphones as remote controls has been widely adopted, with many apps developed for this purpose. These apps enable users to navigate the Smart TV's interface and control various features such as volume and channel selection. Voice control is another popular technique used for Smart TV app control. With the use of natural language processing (NLP) technology, users can interact with their Smart TVs using voice commands. This technique eliminates the need for a physical remote control, providing a hand- free and convenient user experience. Touch control is another approach used for Smart TV app control. This technique involves using a touchpad or touchscreen interface to control the Smart TV's functions. The use of touch control has become increasingly popular due to the widespread adoption of touchscreen devices such as smartphones and tablets.

Gesture recognition is another technique used for Smart TV app control. This technique involves using sensors and cameras to detect and interpret hand movements and gestures. Gesture recognition provides an intuitive and interactive user experience, allowing users to control their Smart TVs using hand movements. The literature survey also identified some of the challenges faced during the design and implementation of Smart TV app control. These challenges include the need for standardized protocols for communication between Smart TVs and smartphones, the compatibility of different Smart TV models with remote control apps, and security concerns.

In conclusion, Smart TV app control provides a convenient and intuitive user experience. The reviewed papers showed that there are different approaches and techniques used for Smart TV app control, including using smartphones as remote controls, voice control, touch control, and gesture recognition. However, challenges such as compatibility issues and security

V. CONCLUSIONS

In conclusion, Smart TV app control provides users with a convenient and easy-to-use way to interact with their Smart TVs. Smartphone apps and websites can be used as remote controls, allowing users to perform various functions such as changing channels, adjusting volume, and accessing streaming services. This technology has become increasingly popular due to its ease of use, accessibility, and versatility. The literature survey discussed various approaches to control Smart TVs using smartphone apps or websites, and highlighted the advantages and limitations of each approach. Overall, Smart TV app control offers a seamless and efficient way to enjoy and manage Smart TV content, and its popularity is expected to continue growing in the future. The interface built on HTML5 can be manipulated by using the keyboard. In addition, remote controller mock-up that can be used for usability testing was also produced. It has been developed to enable menu operation by mounting a PCB board inside. However, changing the actual channel was difficult to implement, so we could use sample images and test them with experts It can only be useful for parental control and having a command where the any person can control or display anything or anywhere so such things not only can be useful for control but also for displaying important information. In conclusion, controlling Smart TVs using apps or websites is becoming increasingly popular due to its convenience and ease of use. The literature survey highlighted the various approaches and techniques used to integrate Smart TVs and smartphones for remote control. Smart TV remote control apps have features such as voice control, touch control, and gesture recognition, making them easy to use and accessible to all users. The reviewed papers also identified the challenges faced during the design and implementation of these applications. However, with the continuous advancement in technology, Smart TV app control is expected to become more intuitive and offer even more features in the future, further improving the overall user experience.

VI. ACKNOWLEDGMENT

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