

BLUETOOTH TELEVISION REMOTE CONTROL

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Tajuk Projek : BLUETOOTH TV REMOTE CONTROL

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ABSTRACT

This project is about the interaction between a smartphone with a television using an intermediary Bluetooth and IR transmitter. BTVRC is a system that can control what is on the television remote control. The purpose this project is to build a different television remote control with a conventional television remote control. The main benefit of this project is to allow users, for example, in terms of control, even in an environment where a Bluetooth, the signal can still be received even with the obstacle. In addition, from television, this system can also be used in arcade, fan or electronic equipment which have an IR receiver. The main part of this project is the android application and also Bluetooth Module IR transmitter. The project is expected to integrate software and hardware went smoothly.

ABSTRAK

Projek ini adalah mengenai interaksi diantara telefon pintar dengan television menggunakan perantara bluetooth dan IR penghantar. BTVRC adalah satu sistem dimana dapat mengawal apa yang ada pada alat kawalan television. Tujuan projek ini adalah untuk membina alat kawalan television yang berbeza dengan alat kawalan television konvensional. Faedah utama projek ini adalah untuk memudahkan pengguna, contohnya dari segi kawalan, walaupun dimana persekitaran yang di dalam jarak bluetooth, isyaratnya tetap dapat diterima biarpun dengan ada halangan. Selain daripada television, sistem ini dapat juga digunakan di aircond, kipas atau peralatan elektronik yang mempunyai penerima IR. Bahagian utama projek ini adalah aplikasi android dan juga pemancar bluetooth IR. Projek ini dijangka dapat mengintegrasikan perisian dan perkakasan yang dengan lancar.

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LIST OF ABBREVIATIONS

BTVRC	-	Bluetooth TV Remote Control
TV	-	Television
GUI	-	Graphical User Interface
IR	-	Infrared
PCB	-	Printed Circuit Board
RC	-	Remote Control
PC	-	Personal Computer
Wi-Fi	-	Wireless Fidelity
OS	-	Operating System
Hz	-	Hertz
DVD	-	Digital Video Disc
VCR	-	Video Cassette Recorder
PDA	-	Personal Digital Assistant
LED	-	Light-Emitting Diode
SPP	-	Serial Port Protocol
EDR	-	Enhanced Information Rate

AFH	-	Adaptive Frequency Hopping Feature
CMOS	-	Complementary Metal–Oxide–Semiconductor
Apps	-	Application
XML	-	Extensible Markup Language
API	-	Abbreviation Of Application Program Interface
TX	-	Transmitter
RX	-	Receiver
UART	-	Universal Asynchronous Receiver/Transmitter
USART	-	Universal Synchronous / Asynchronous Receiver / Transmitter
APK	-	Android Application Package
SDK	-	Software Development Kit
MAC	-	Media Access Control
UUID	-	Universally Unique Identifier
BLE	-	Bluetooth Less Energy

LIST OF SYMBOLS

Ft	-	Feet
mA	-	mille Ampere
V	-	Volt
Kbps	-	kilobits per second
MHz	-	Mega Hertz
KHz	-	Kilo Hertz
KB	-	Kilo Bytes
MB	-	Mega bytes

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CHAPTER I

INTRODUCTION

1.1 Summary of Introduction

This chapter presents the general ideas of the research which provides an overview of the Bluetooth TV Remote Control. Basically, it consists of four main sections, such as background, problem statement, objectives and scopes which describe the overall operation of this Bluetooth TV Remote Control.

1.2 Introduction

Nowadays, there is so much time to move forward with the development of technology and standards of living is rising, it means that the number of televisions with various brands also increased. Therefore, many companies are trying to produce the best remote control device with their own brand and specifications. A variety types of control devices that exist at a given time is also difficult for the user to choose the control device to be used as a form of control device be almost the same. The problems faced by users to choose the type of remote control is easy and convenient to use. In addition, the problems encountered on the remote control are

like, a bad battery, electronic glitch in remote control device, remote control device does not change channels and networks to detect transmitter. For Android mobile phone users, not all brands available in the market can support the use of infrared on the phone. To solve this problem, BTVRC designed by interactions between android, Bluetooth and infrared. In addition, BTVRC is the solution to overcome the damage that commonly occur with touch key controls for TV, which indirectly easier for users to control it remotely. Based on the above reasons, which is why the remote control by Bluetooth communication as a medium of communication and infrared technology with a connection to the Arduino as the sender developer

1.3 Objective

The goals of this Final Year Project

- To develop application android that can communicate using Bluetooth
- To develop hardware that received Bluetooth signal and transmit infrared

1.4 Problem Statement

The problems faced by the user to select the type of control that is simple and easy to use. In addition, the problems encountered on the remote control are such a weak battery because the battery does not have a long shelf life, due to electronic noise in remote control device, remote control device does not change the channel due to of interference on embedded circuit and a circuit for detecting the transmitter sent by a remote control device. In addition, the use of various equipment decoders at the same time also makes it difficult for users to choose the remote control device to be used due to the confusion of similar design. Distance between transmitter and receiver is also effective to prevent the transmission of broadcast. If there are obstacles on the IR receiver television, the Infrared function also may not function because the information sent by remote control device IR receiver is not received by the due reflection at the barriers. To solve this problem, the system used BTVRC, which is the interaction between android, Bluetooth and infrared developed.

1.5 Scope of Work

All projects should have the scope they want to achieve so as not to deviate from what has been planned. The first scope of this project is to analyse the IR signal. There are many different ways that can be used to analyse the IR signal such as using oscilloscope, sources from the Internet and also using equipment microcontroller. The second scopes are to develop android application. There are several software options that can be used to develop this android but for BTVRC using the Eclipse. The final scope is to BTVRC hardware design. The scope is to create and identify the necessary connections between the devices used in this BTVRC.

1.6 Report Structure

This report is a written documentation of the generated idea, concepts applied and completion of tasks. It comprises of five chapters. The followings are the summary of each chapter in this report.

Chapter 1 provides readers with a brief introduction on why and how this project is developed. This chapter contains the introduction, objectives of the project, problem statement, scopes of work, significant of project and the report structure.

Chapter 2 contains the literature review of concepts applied in this project. This chapter present several background studies of previous projects that are related to this project. Apart from that, this chapter also provide readers with the general idea of what hardware will be used.

Chapter 3 presents the methodology on completing the project. This section includes a module of implementation, block diagram of proposed technique, the hardware that will be used and the summary of implementation of the project.

Chapter 4 will be discussing the outcome of this project. Each module will be discussed in detail up until the integration of each module. The results will be analysed and the result will be reviewed.

Chapter 5 is the conclusions of this project. This chapter will conclude the findings in this project. This portion will include some suitable recommendations to further improve this project in the future.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction of Remote Control

Remote control (RC) is one, usually hand-held, small of electronic devices to prevent other appliances, such as the television, radio or recording devices audio / video from your remote. Remote controls via infrared signals normally work but sometimes with a radio frequency signal. The remote control can control many different functions such as volume, station, track number and other features. The tool of modern remote control has more functions than the control that comes with the device itself, which may have some control of major importance.

Most electronic equipment handy remote control is done by infrared signal having a diode that emits an invisible beam of infrared light. Multi-channel remote control using advanced technology to modulate the carrier signal, demodulate received signals, and using multiple frequency filter to separate the signals to multi-function remote control handy. However, this infrared signal should be in line of sight to control the device, and can be shown in the mirror as will any other light source.

Some handy remote control is done by radio frequency signals. It does not require visual brand for the device being controlled. They can be found as concentrated in