

SPEECH-TO-TEXT MICROCONTROLLER
BASED LED MATRIX SCROLLING
DISPLAY

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B. ENG. (HONS.) MECHATRONICS ENGINEERING
UNIVERSITI MALAYSIA PAHANG

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Report submitted in partial fulfillment of the requirements
for the award of the
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JUNE 2016

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TABLE OF CONTENTS

		Page
SUPERVISOR’S DECLARATION		II
STUDENT’S DECLARATION		III
ACKNOWLEDGEMENTS		IV
ABSTRACT		V
ABSTRAK		VI
TABLE OF CONTENTS		VII
LIST OF FIGURES		X
CHAPTER 1 INTRODUCTION		
1.1	Introduction	1
1.2	Problem Statement	2
1.3	Objectives of the Research	2
1.4	Scope of Study	3
1.5	Overview of Thesis	3
CHAPTER 2 LITERATURE REVIEW		
2.1	Introduction	4
2.2	Type of micro controller	5
2.3	Related Projects and Articles	5
2.4	Integrated Networked Security System	6

2.5	Fundamental of Physical Computing for Programmers.	6
2.6	Remote Control from Your Mobile.	8
2.7	Speech to Text Conversion using Android Platform	8
2.8	System and method for cloud-based text-to-speech web services.	9
2.9	Arduino Serial Communication.	10

CHAPTER 3 METHODOLOGY

3.1	Introduction	11
3.2	flow chart for the project	12
3.3	Electrical Design.	13
3.3.1	Max7219 Led Driver	13
3.3.2	8x8 Dot- Matrix Display	16
3.3.3	Bluetooth module (HC-06)	17
3.3.4	Arduino Uno R3	18
3.4	Software Integration	20
3.4.1	Arduino IDE	22

CHAPTER 4 RESULTS AND DISCUSSION

4.1	Introduction	23
4.2	Mobile App	24
4.3	Arduino Setup	26

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1	Conclusion	29
5.2	Recommendations for the Future Research	30
REFERENCES		31
APPENDICES		32
A1		32

LIST OF FIGURES

Figure No.	Title	Page
2.1	Max7219 pin out.	7
3.1	Flowchart of the project.	12
3.2	Basic design of the driver circuit in Daisy chain.	13
3.3	MAX7219 connections to the 8x8 dot- matrix.	14
3.4	Cascading MAX7219/MAX7221s to Drive 16 Seven-Segment LED Digits.	15
3.5	8x8 dot matrix internal circuit.	16
3.6	8x8 dot matrix pin layout.	16
3.7	HC 06 Dimension.	17
3.8	An example of arduino running an 8x8 dot matrix display schematic.	21
3.9	MAX7219 being run by arduino simulation.	21
3.10	Detailed programming outline flowchart.	21
3.11	Arduino IDE user interface.	22
4.1	The finished product.	23
4.2	Android Meet Robot(AMR) application in android smart phone.	24

Figure No.	Title	Page
4.3	Pairing the bluetooth of the smart phone to the bluetooth module (HC-06).	25
4.4	The interface of mic button in the Android Meet Robot application.	25
4.5	Arduino coding header.	27
4.6a	App testing the sending the data words spoken.	28
4.6b	The app display the the data words spoken.	28
4.7	LED dot-matrix display showing the intended spoken words.	28

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ABSTRACT

For an information spread medium, a speaker is used to convey the information to more people at once. While the use of speaker creates a lot of noise pollution, a dot-matrix display were used all around the world to convey message to the public more efficiently. A dot-matrix led display is a display device the were used to convey information on machines, clocks, railway departure indicators and many other devices.. The display consists of a dot matrix of led lights that works by switching on or off selected lights. A common problem is the display is usually placed at high place to make it visible yet this poses a problem to reprogram the display if there is any new message to be written or spoken. The project uses an arduino Uno that communicate with an android phone through a bluetooth module to reprogram a dot-matrix display. Through this, the display can show new message through the voice recognition wireless using an app used by an android mobile phone.

ABSTRAK

Untuk medium penyebaran maklumat ke media massa. Pembesar suara digunakan untuk menyampaikan maklumat tersebut kepada lebih ramai orang sekaligus. Manakala penggunaan pembesar suara mewujudkan banyak pencemaran bunyi, paparan dot-matriks telah digunakan di seluruh dunia untuk menyampaikan mesej kepada orang ramai dengan lebih cekap. Paparan dot-matriks biasanya digunakan untuk menyampaikan maklumat pada mesin, jam, petunjuk berlepas kereta api dan peranti-peranti lain. paparan ini terdiri daripada matriks dot lampu yang bergerak apabila lampu - lampu telah dipilih untuk dinyalakan atau dipadamkan.. Satu masalah biasa adalah paparan biasanya diletakkan di tempat yang tinggi supaya mudah dilihat tetapi ini menimbulkan masalah untuk mengubah paparan jika terdapat apa-apa mesej baru yang akan ditulis atau dituturkan. Projek ini menggunakan Arduino Uno yang berkomunikasi dengan telefon android melalui modul bluetooth untuk mengubah paparan dot-matriks. Melalui ini, paparan boleh menunjukkan mesej baru melalui suara tanpa wayar menggunakan sebuah aplikasi yang digunakan oleh telefon bimbit android.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

In this modern world full with vast growing technology, information is being transfer and convey into many form. Each of the information were conveyed by its specific need, like a computer server that store massive data that can be excess throughout the world in. Voice or speech recognition is the ability of a machine or program to receive and interpret dictation, or to understand and carry out spoken commands.As for this device, the information is being visually transmitted from the dot matrix display straight to the viewers by using voice recognition.

The necessary design and the creation of the remote programming device for LED display using an android OS system interface which includes the following component: Smart phone, LED display, Bluetooth module, arduino microcontroller and a basic circuit. The project is aimed to be used as an alternative way to program the LED display to ease the user the trouble to bring the display panel down from its usually high positioned place to the point that the LED display can be program from afar as the Bluetooth range can support.

The aim for this project is to design a working LED display that can be use and be program by any smart phone user using an android interface with an application specifically develop to use the Bluetooth capability of the phone and communicate with another Bluetooth module thus remotely program the LED display using a voice to sent the messages.

1.2 PROBLEM STATEMENT

The most common problem using the LED display comes when to reprogramming it. But these off-the-shelf units are somewhat inflexible in terms of updating the message instantly. If the user wants to change the message it needs to be done using a computer and the person needs to be present at the location of the display board. Furthermore, all voice-recognition systems or programs make errors. Screaming children, barking dogs, and loud external conversations can produce false input. There is also a problem with words that sound alike but are spelled differently and have different meanings.

1.3 OBJECTIVE

In this research, the objective is to design the mean to wireless transfer serial data from an android phone to send new voice message for the dot-matrix to display.

- (i) To design and implement an arduino based led matrix scrolling display.
- (ii) To integrate an android application that able to access the bluetooth capabilities in the phone.
- (iii) To implement speech to text to convey the message.

1.4 SCOPE OF STUDY

In this research, the following works are to be completed

- (i) Develop an application for android using (programming) software
- (ii) Identify and study the component required to establish the Bluetooth connection and voice recognition.
- (iii) Analyze the possible method of coding that enable the remote programming to be done.

1.5 OVERVIEW OF THESIS

This thesis consist of five chapters. The objectives,scope and problem statement is the topic being discuss in chapter 1. In chapter 2, there are the explanation of the method being conducted and what areas are tested in previous project. Furthermore, in chapter 3 is the methodology of the project including both hardware and software are presented. The result and the outcome of the project are documented in chapter 4. The last chapter which is chapter 5 contain the conclusion and future recommendation regarding of the project.

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