Universiti Teknologi Mara

Smart Mirror Student Timetable Management System based on IoT Platform using Raspberry Pi

Nur Afiqah binti Zubir

Thesis submitted in fulfilment of requirements for Bachelor of Computer Sciences (Hons.) Data Communication and Networking

December 2018

STUDENT DECLARATION

I certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

NUR AFIQAH BINTI ZUBIR 2016326677

DECEMBER 5, 2018

ABSTRACT

In the modern work, the tasks become more complex and difficult to manage which causes a lot of students complete their assignments during last minutes. This limitation of tools and devices around them which can only perform one task at a time makes the students' life more miserable. To solve this problem, this project has developed a Smart Mirror Student Timetable Management System based on IoT Platform using Raspberry Pi. The Smart Mirror technology is one of the Smart Home device that can help the students to manage their time wisely. The aim of this project is to develop a Smart Mirror Student Timetable Management System based on IoT Platform using Raspberry Pi. For the time constraints, this project is focused on students with poor time management. So, this project will probably help these students in a smart and efficient way. In order to accomplish this project, the researcher has applied Waterfall method in the methodology phase. This method starts with requirement analysis phase, continued with planning phase, designing phase, development phase and finally testing phase. After the prototype has successfully developed, the testing is done by using functionality testing. The testing is carried on the website and the prototype itself to test whether they are functioning well or not. The result of the testing has been analysed and recorded respectively into a table formed.

Keyword: Internet of Things, Smart Mirror, Raspberry Pi, Student Timetable Management System

TABLE OF CONTENTS

CON	NTENT	Γ	PAGE	
SUPI	ERVIS(OR APPROVAL	ii	
STUDENT DECLARATION				
ACKNOWLEDGEMENT			iv	
	ΓRACT		v	
TABLE OF CONTENTS			vi	
LIST	LIST OF FIGURES			
LIST	OF TA	ABLES	X	
LIST	OF AF	BBREVIATIONS	xi	
СНА	PTER (ONE: INTRODUCTION		
	1.1	Research Background	1	
	1.2		2	
	1.3		3 3	
	1.4	Research Objectives Research Scope	3	
	1.6	Research Significance	4	
CH	APTER	TWO: LITERATURE REVIEW		
2.1	IoT		5	
	2.1.1	IoT Architecture	5	
	2.1.2	IoT Technologies	7	
2.2	Raspberry Pi		8	
	2.2.1	Raspberry Pi Performance and Architecture	8	
2.3	Student Timetable Management System		10	
	2.3.1	Principle of Timetable	10	
	2.3.2	Design of Timetable Management System	11	
2.4	Smart Mirror		11	
	2.4.1	Smart Mirror Implementation	11	

	4.1.3	Adobe Dreamweaver	33	
4.2	Devel	opment of Student Timetable Website	34	
	4.2.1	Create Database	34	
	4.2.2	Develop Student Timetable Website	35	
4.3	Devel	opment of Smart Mirror Student Timetable	37	
	Mana	gement System based on IoT Platform using		
	Raspberry Pi			
	4.3.1	Configuration of Raspberry Pi	38	
4.4	Summ	nary	40	
CHA	APTER	FIVE: RESULT AND ANALYSIS		
	_			
5.1	•	imentation	41	
	5.1.1	Functionality Testing on Student Timetable Website	42	
	5.1.2	Functionality Testing on Smart Mirror Student	45	
		Timetable Management System based on IoT		
		Platform using Raspberry Pi		
5.2 Summary				
CTT	DEED			
CHA	APTER	SIX: CONCLUSION AND RECOMMENDATION		
6.1	Concl	usion	48	
6.2	Limita	ation and Recommendation	50	
REFERENCES				
APP	ENDI	CES		
APPENDIX A: Full Coding of Smart Mirror				
ДРР	APPENDIX R. Test Case for User			