

SMJE 4813 CAPSTONE DESIGN PROJECT MOVEMENT ASSIST DEVICE FOR VISUALLY IMPAIRED PEOPLE

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PRESENTATION OUTLINE

- ✓ INTRODUCTION
- ✓ RESEARCHPROBLEMS
- ✓ MOTIVATIONS
- ✓ LITERATURE REVIEW
- ✓ FLOWCHARTSYSTEM
- ✓ REFERENCE CIRCUIT

- ✓ CIRCUIT DESIGN
- ✓ GANTT CHART
- ✓ CONCLUSION
- ✓ FUTURE WORKS
- ✓ DEMONSTRATION



INTRODUCTION



DEFINITION OF VISUALLY IMPAIRED

- The person's eyesight cannot be corrected to become a normal vision or blindness.
- Category of blindness :
 - Blindness since birth
 - Blindness due to multiple reasons
 - Eye damage
 - Brain failure to process visual from the eye
- Global major cause of visually impaired
 - 43% uncorrected refractive errors (Myopia, Hyperopia or Astigmatism)
 - 33% due to un-operated cataract
 - 2% due to glaucoma
 - -12% others



 Number of visually impaired in Malaysia : (Data from Tun Hussien Onn National Eye Hospital)



RESEARCH PROBLEM

Hygiene issue especially in indoor area

Length is not available for different age and height PROBLEMS OF USING CANE



MOTIVATIONS

Create an innovation of engineering implementation for the social needs especially for the visually impaired people

• make their movement become more easier

A walking assist devices serve in the market nowadays are expensive.

• develop a new indoor walking assist device using technology that is available in the market for visually impaired people with affordable price





LITERATURE REVIEW

products	DESCRIPTIONS
<image/>	 Located on the wrist To detect the object and to prevent any dangerous and obstacles Output = Vibrations Not all people have same level of vibration since they have thick wrist point
Wireless Handheld Portable Navigation System [2]	 Connected to GPS Able to measure the distance walked by the users by mentioning the number of steps from the detected object or boundaries Limitations: Have problem with signal coverage thus prevent the user to receive accurate position.



products

Smartphone for Blind Person Operated by Using Touch Gesture and Voice [3]



DESCRIPTIONS

- Input: touch gesture and voice
- No any extra equipment is needed to wear
- The users feel self-conscious
- Limitations: The sensors that is embedded such as recognize and detect object or speak text to describe places are still not fully exploited

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innovative • entrepreneurial • global



REFERENCE CIRCUIT



Basic Circuit Obtain from Circuit Digest

Design Requirement

- Only one buzzer ON at one time.
- Buzzer have different frequency on certain distance.

CIRCUIT DESIGN



IR Sensor

OP AMP for Voltage Comparator



TRANSISTORS FOR SWITCHING BUZZER

: : : :	VCC		VCC	· · · · ·	VCC
	9V		9V		9V
· · · · ·				· · · · ·	
			<u> </u>		
· · · · ·	BUZZER		BUZZER	· · · · ·	:: BUZZER::
	13.83HZ		0.68/HZ		1HZ
	Q6		Q8		Q1
A		A -		^к А ^к -	<u> </u>
	BC557B		BC557B		BC107BP
	Q5		Q4		
B -		В –	Ľ	В -	
	BC557B		BC107BP		BC107BP
	Q7		Q3		
\sim	aplication.	\sim	: J The second	\mathbf{C}	
C -		. C -	h	<u> </u>	- -
	BC107BP		BC107BP		BC107BP
				· · · · ·	
			· 🛓 · · · · · · ·		· +

INPUT A	INPUT B	INPUT C	BUZZER 1	BUZZER 2	BUZZER 3
0	0	1	1	0	0
0	1	1	0	1	0
1	1	1	0	0	1

NPN Transistor – Positive based trigger PNP Transistor – Negative based trigger



TIMER 555 CIRCUIT

A monolithic timing circuit that produces accurate and highly stable time delays or oscillation.

The external components e.g. resistors and capacitors was selected properly for choosing suitable timing intervals and frequencies of the buzzer.

	EQUATION	BUZZER 1	BUZZER 2
Time ON	$0.693[R_1 + R_2]C_1$	0.762 s	0.038 s
Time OFF	$0.693 \times R_2 \times C_2$	0.693 s	0.033 s
Duty Cycle	$\frac{R_1 + R_2}{R_1 + 2R_2}$	52.63 %	54.95 %
Time Period	$0.693[R_1 + 2R_2]C_1$	1.455 s	0.072s
Frequency	$\frac{1}{0.693[R_1 + 2R_2]C_1}$	0.687 Hz	13.83 Hz



FULL ELECTRONIC CIRCUIT







GANTT CHART

Task Name		Q3			Q4			Q1	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
🖃 Holiday									
Break after Industrial Training						-			
Introduction to SMJE 4813									
Introductory lecture							Color	Deta	ils
Group Formation									
Project Management			=					Task	_
First meeting with group member								proje	cted
Project Overview			F					Com	pleted
List of titles			F						
Meeting with SV			-	1					
Online quiz			-						
Preliminary Report									
Problem									
Motivation									
Previous work									
Approach									
Future works									
Reference									
Gantt chart									
compilation									
Preliminary Report Review									
submit for SV for review									
Meeting with SV									
Improvise preliminary report									
Meeting with SV									
Improvise preliminary report									
EndNote									
Reference style									
Preliminary Design									
Study on revert sensor circuit design									
Component analysis				C					17
Study on revert sensor circuit					1				1/

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Task Name	Q3		Q4						
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Circuit analysis				=					
Preliminary budget				-					
Meeting with SV									
Improvise preliminary report									
Buy components									
Meeting with SV									
Improvise preliminary report									
Buy components									
Preparation for preliminary presentation							Color		Details
Preliminary Presentation							COIOI		Details
Presentation					٥				Task
Meeting with SV									
Improvise preliminary report					Ē				Completed
Meeting with SV									
Final report preparation						-			
Circuit improvisition						-			
Assembly and Test							1		
Fabricate the circuit on breadboard							2		
Final report draft									
Report submission							Ð		
Presentation									
Final presentation							0		
Submission of Logbook and Report									
Logbook and Final Report									18



Improve user's setting and distance controlled for the device to respond furthest. Provide the students with more advanced engineering software instead of Multisim for circuit design (Proteus)

• limitation of components

Plugging in earphones (controllable)

FUTURE WORKS Recommend to use the Arduino for this project

- more reliability
- could be used for circuit designing including with insertion of IR sensor



CONCLUSION

The idea of contributing to the society especially to the people in need is realized throughout this project.

We make a living by what we get. We make a life by what we give." — Winston S. Churchill



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DEMONSTRATION







THANK YOU