

AUTOMATIC DOOR SLIDER CONTROL USING PIC MICROCONTROLLER BASE ON
INFRARED AND PRESSURE DETECTOR

MOHD ANUAR BIN MOHD BUNYAMI

A Thesis Submitted in Fulfillment of the
Requirement for the Award of the degree of Bachelor of Electronic Industrial Engineering

School of Electrical System
Universiti Malaysia Perlis

MAY 2011

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DECLARATION SHEET

I hereby declare that my Final Year Project Thesis is the result of my research work under supervision of YM. ENGKU AHMAD RAFIQI BIN ENGKU ARIFF. All literature sources used for the writing of this thesis have been adequately referenced.

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APPROVAL AND DECLARATION SHEET

This project report titled Automatic Door Slider Control using PIC Microcontroller base on Infrared and Pressure Detector submitted by Mohd Anuar Bin Mohd Bunyami (Matrix Number: 081070441) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Electronic Industrial Engineering) in Universiti Malaysia Perlis (UniMAP).

Checked and Approved by

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May 2011

DEDICATION

Special dedicated,

To my beloved wife, mother and father

Thanks for your morale support, encouragement and understanding

To my lovely friends Thank you for all your help

May Allah bless all of your kindness.

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ACKNOWLEDGEMENT

Alhamdulillah, thanks to ALLAH swt for His blest. The willingness of His Almighty enables me to complete this thesis. First of all, I would like to take this opportunity to express my gratitude to my supervisor, YM Engku Ahmad Rafiqi Bin Engku Ariff for his guidance and encouragement that had given to me throughout the progress of this project.

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Thank you.

ABSTRACT

This 'Automatic Door Slider' projects are used PIC Microcontroller based on Infrared and Pressure Detector to open and close doors at the entrance of public building. The main objective of this project are understand the concept involving of PIC Microcontroller programming linked with DC motor, Infrared and Pressure Detector. PIC 16F877A Microcontroller is use as the brain of the project which controlled the speed of the movement Door Slider by DC motor. To make sure this project are properly functioned, all the data and information will processed and it will used C language to program it with MPLAB IDE. The Pulse Width Modulation, PWM technique is being used which this signals send to motor driver to make sure constantly speed are varied. This method also to make sure interface between the controller and user are rapidly smooth.

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ABSTRAK

Projek 'Automatic Door Slider' ini menggunakan 'PIC Microcontroller' berdasarkan sinaran cahaya merah dan juga pengesan tekanan untuk membuka dan menutup pintu secara automatik pada sesuatu bangunan awam. Objektif utama projek ini adalah untuk memahami konsep yang melibatkan 'PIC Microcontroller' program yang disambungkan dengan motor DC, sinaran cahaya merah dan pengesan tekanan. 'PIC 16F877A' program adalah otak kepada projek ini yang mengawal kelajuan pergerakan 'door slider' menggunakan motor DC. Untuk memastikan projek ini berfungsi sepenuhnya segala data dan maklumat diproses dan menggunakan bahasa pengaturcaraan C diprogramkan dengan 'MPLAB IDE'. Teknik 'Pulse Width Modulation (PWM)' yang digunakan akan menghantar isyarat kepada 'driver' motor untuk memastikan kelajuan motor adalah seragam. Ini juga adalah untuk melancarkan perhubungan antara para pengguna dengan alat kawalan.

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LIST OF SYMBOLS

K_E	-	A constant based on motor construction
ϕ	-	Magnetic flux
I_f	-	Field current
I_a	-	Armature current
R_f	-	Field resistor
L_f	-	Field inductor
R_a	-	Armature resistor
L_a	-	Armature inductor
K_v	-	Motor constant
K_t	-	Torque constant
T_d	-	Developed torque
T_L	-	Load torque
B	-	Viscous friction constant
J	-	Inertia of the motor
ω	-	Motor speed
α	-	Firing angle of thyristor
t_{on}	-	Time ON of switches
T	-	Period/ Time
f_{out}	-	Frequency of output waveform
N	-	Number of slots at disc
s	-	Standard deviation
rpm	-	Rotation per minute

LIST OF ABBREVIATIONS

PIC	-	Programmable Interface Controller.
LCD	-	Liquid Crystal Display
PIR	-	Passive Infrared
IR	-	Infrared
MPLAB IDE	-	Integrated Development Environment
CSAIL	-	Computer Science and Artificial Intelligence Laboratory.
CAD	-	Computer Aided Design
DC	-	Direct Current
IC	-	Integrated Circuit
USB	-	Universal Serial Bus
PWM	-	Pulse Width Modulation
LED	-	Light Emitting Diode
ICSP	-	In-Circuit Serial Programming
ASCII	-	American Standard Code for Information Interchange
AVR	-	Advanced Virtual RISC



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