

T.J.S. ENGINEERING COLLEGE
PERUVOYAL, KAVARAIPETTAI-601206
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING



EE6811- MINI PROJECT WORK

S.NO	REG NO	NAME OF THE STUDENT	PROJECT TITLE	NAME OF THE GUIDE
1	112819105001	GOKUL S	HAND GESTURE CONTROLLED ROBOT USING ARDUNIO	MR.P.ANANDHA PRAKASH AP/EEE
2	112819105004	SANJAY M P		
3	112819105301	NAWIN P		
4	112819105302	SANTHOSH K B		
5	112819105003	KUMARESAN V	AUTOMATIC IRRIGATION SYSTEM WITH ANDROID APPLICATION	DR.I.ARUL DOSS ADAIKALAM, PHD
6	112819105005	SANJAYMOHAN K		
7	112819105304	KARTHICK B		
8	112819105303	THENNARASAN R V		

PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavaraipettai,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 206.





**HAND GESTURE CONTROLLED ROBOT USING ARDUNIO
A MINI PROJECT REPORT**

Submitted By

GOKUL S	(112819105001)
SANJAY M P	(112819105004)
NAWIN P	(112819105301)
SANTOSH K B	(112819105302)

In partial fulfilment for the award of the degree

of

BACHELOR OF ENGINEERING

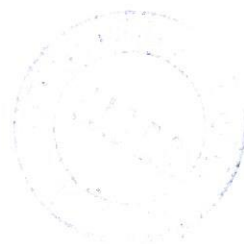
In


ELECTRICAL AND ELECTRONIC ENGINEERING

T.J.S. ENGINEERING COLLEGE, PERUVOYAL

ANNA UNIVERSITY: CHENNAI 600 025

JUNE 2022




PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavarapettai,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 206.

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "HAND GESTURE CONTROLLED ROBOT USING ARDUINO" is the bonafide work of the following students.

GOKUL S (112819105001)

SANJAY M P (112819105004)

NAWIN P (112819105301)

SANTOSH K B (112819105302)

Who carried out the mini project work under my supervision.

Shunmuga
SIGNATURE

Mrs. M. SHUNMUGA SANKARI, M.E.,
Associate Professor

HEAD OF THE DEPARTMENT

Department of Electrical and

Electronics Engineering

T.J.S. Engineering College

Peruvoyal.

P. Panandha Prakash
SIGNATURE

Mr. PANANDHA PRAKASH, M.E.,
Assistant Professor

SUPERVISOR

Department of Electrical and

Electronics Engineering

T.J.S. Engineering College

Peruvoyal

Submitted for viva voce held on 21/06/22 at T.J.S. Engineering College, Peruvoyal.

Shunmuga
INTERNAL EXAMINER

P. Panandha Prakash
EXTERNAL EXAMINER



J. Sankar
PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kamarajpettal,
Chinnivandur Taluk,
Thiruvallur Dist - 601 206.

ABSTRACT

This paper presents a Hand Gesture Controlled Robot using Arduino, which can be controlled by simple hand gesture. According to the movement of the person hand, the accelerometer start moves. It is based on axis of accelerometer and robot move in four direction forward, backward, left and right. For sensing Human motion, we use infrared sensor, it's range is 790mm wavelength from human body. This type of robot widely used in military application, industrial robotic, construction field. In such a field, it is very risky and complicated to handle the machines through switches or remote, sometimes operator may be confused so this new concept introduce to control the machine with the movement of hand which will simultaneously control the robot. Keywords: Arduino Technology, gesture, Accelerometer, Infrared sensor.



PRINCIPAL
T.S. ENGINEERING COLLEGE
Pettuvayal, Thiruvallur,
Thiruvallur Dist - 601 206.

EE8691

EMBEDDED SYSTEMS

L T P C
3 0 0 3

OBJECTIVES:

To impart knowledge on the following Topics

- Building Blocks of Embedded System
- Various Embedded Development Strategies
- Bus Communication in processors, Input/output interfacing.
- Various processor scheduling algorithms.
- Basics of Real time operating system and example tutorials to discuss on one real time operating system tool.

UNIT I INTRODUCTION TO EMBEDDED SYSTEMS 9

Introduction to Embedded Systems -Structural units in Embedded processor , selection of processor & memory devices- DMA - Memory management methods- Timer and Counting devices, Watchdog Timer, Real Time Clock, In circuit emulator, Target Hardware Debugging.

UNIT II EMBEDDED NETWORKING 9

Embedded Networking: Introduction, I/O Device Ports & Buses- Serial Bus communication protocols RS232 standard - RS422 - RS 485 - CAN Bus Serial Peripheral Interface (SPI) - Inter Integrated Circuits (I²C) -need for device drivers.

UNIT III EMBEDDED FIRMWARE DEVELOPMENT ENVIRONMENT 9

Embedded Product Development Life Cycle- objectives, different phases of EDLC, Modelling of EDLC; issues in Hardware-software Co-design, Data Flow Graph, state machine model, Sequential Program Model, concurrent Model, object oriented Model.

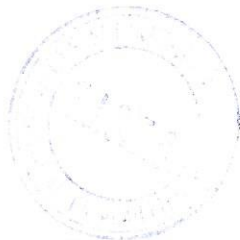
UNIT IV RTOS BASED EMBEDDED SYSTEM DESIGN 9

Introduction to basic concepts of RTOS- Task, process & threads, interrupt routines in RTOS, Multiprocessing and Multitasking, Preemptive and non-preemptive scheduling, Task communication shared memory, message passing-, Inter process Communication - synchronization between processes-semaphores, Mailbox, pipes, priority inversion, priority inheritance.

UNIT V EMBEDDED SYSTEM APPLICATION AND DEVELOPMENT 9

Case Study of Washing Machine- Automotive Application- Smart card System Application-ATM machine -Digital camera

TOTAL : 45 PERIODS



J. Mani
PRINCIPAL

T.J.S. ENGINEERING COLLEGE

Palani, Tamil Nadu - 626 003

Phone: 04562-281111

Website: www.tjs.edu

OUTCOMES:

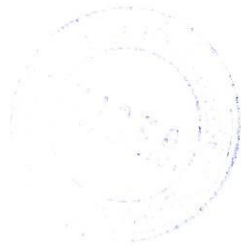
- Ability to understand and analyze Embedded systems.
- Ability to suggest an embedded system for a given application.
- Ability to operate various Embedded Development Strategies
- Ability to study about the bus Communication in processors.
- Ability to acquire knowledge on various processor scheduling algorithms.
- Ability to understand basics of Real time operating system.

TEXT BOOKS:

1. Peckol, "Embedded system Design", John Wiley & Sons, 2010
2. Lyla B Das, "Embedded Systems-An Integrated Approach", Pearson, 2013
3. Shibu. K.V, "Introduction to Embedded Systems", 2e, Mc graw Hill, 2017.

REFERENCES

1. Raj Kamal, 'Embedded System-Architecture, Programming, Design', Mc Graw Hill, 2013.
2. C.R.Sarma, "Embedded Systems Engineering", University Press (India) Pvt. Ltd, 2013.
3. Tammy Noergaard, "Embedded Systems Architecture", Elsevier, 2006.
4. Han-Way Huang, "Embedded system Design Using C8051", Cengage Learning, 2009.
5. Rajib Mall "Real-Time systems Theory and Practice" Pearson Education, 2007.



A handwritten signature in blue ink, appearing to be 'J. Anand'.

PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kankar, Thiruvallur,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 200.