EMBEDDED SYSTEMS

CONTROLLING CAR WITH HAND MOTION

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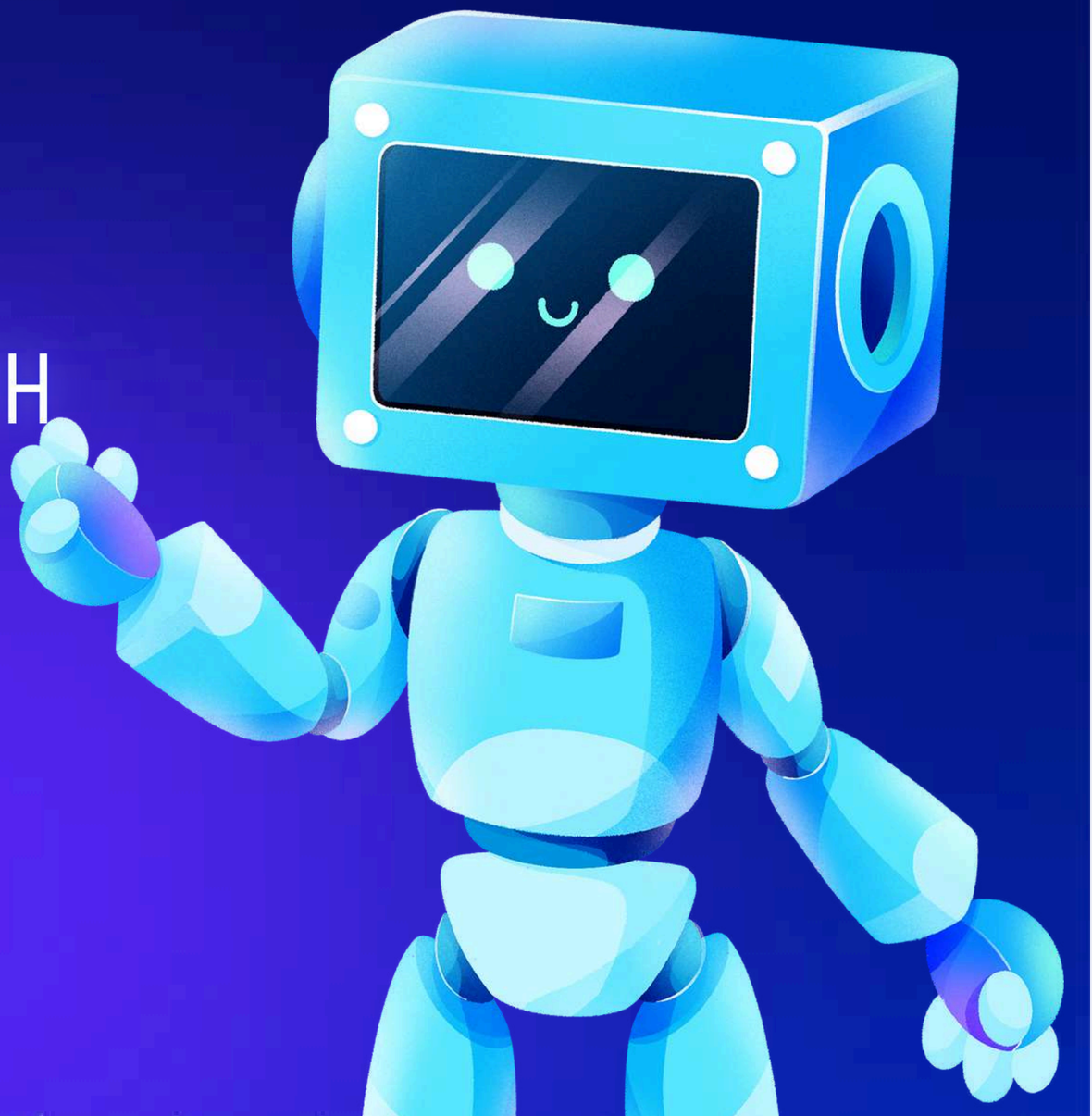
Hozifa Mohamed
Mohamed Emad



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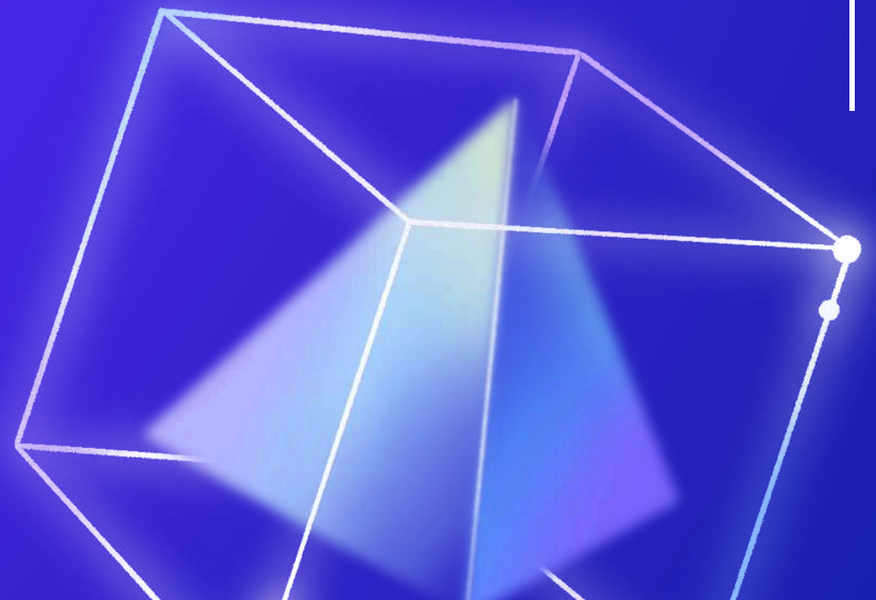


INTRODUCTION

This report explores the concept of controlling a car with hand motions, using sensor-based systems and advanced algorithms. It aims to enhance the driving experience and open new avenues for individuals with physical disabilities. We will uncover the science behind hand motion control systems, their implementation in cars, and their potential impact on future transportation.

PROJECT PROCESS

01

we have watched many videos to understand the concept of how we can implement the idea in the real world.

02

Every member has chosen his preferred task from those tasks:
1- coding & simulation
2- buying the components and finding compatible components related to the videos and the AMIT kit
3- Reading the data sheets & Power Point

03

We have tried to pick a time & place that is available to all the team members which is the hard thing

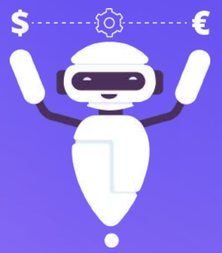
04

we have faced problems while integrating components like esp32 with Amit Kit.
finally, we have solved all these problems by sharing each other ideas.

PROJECT OBJECTIVES

OBJECTIVE 01

GO FORWARD & BACKWORD



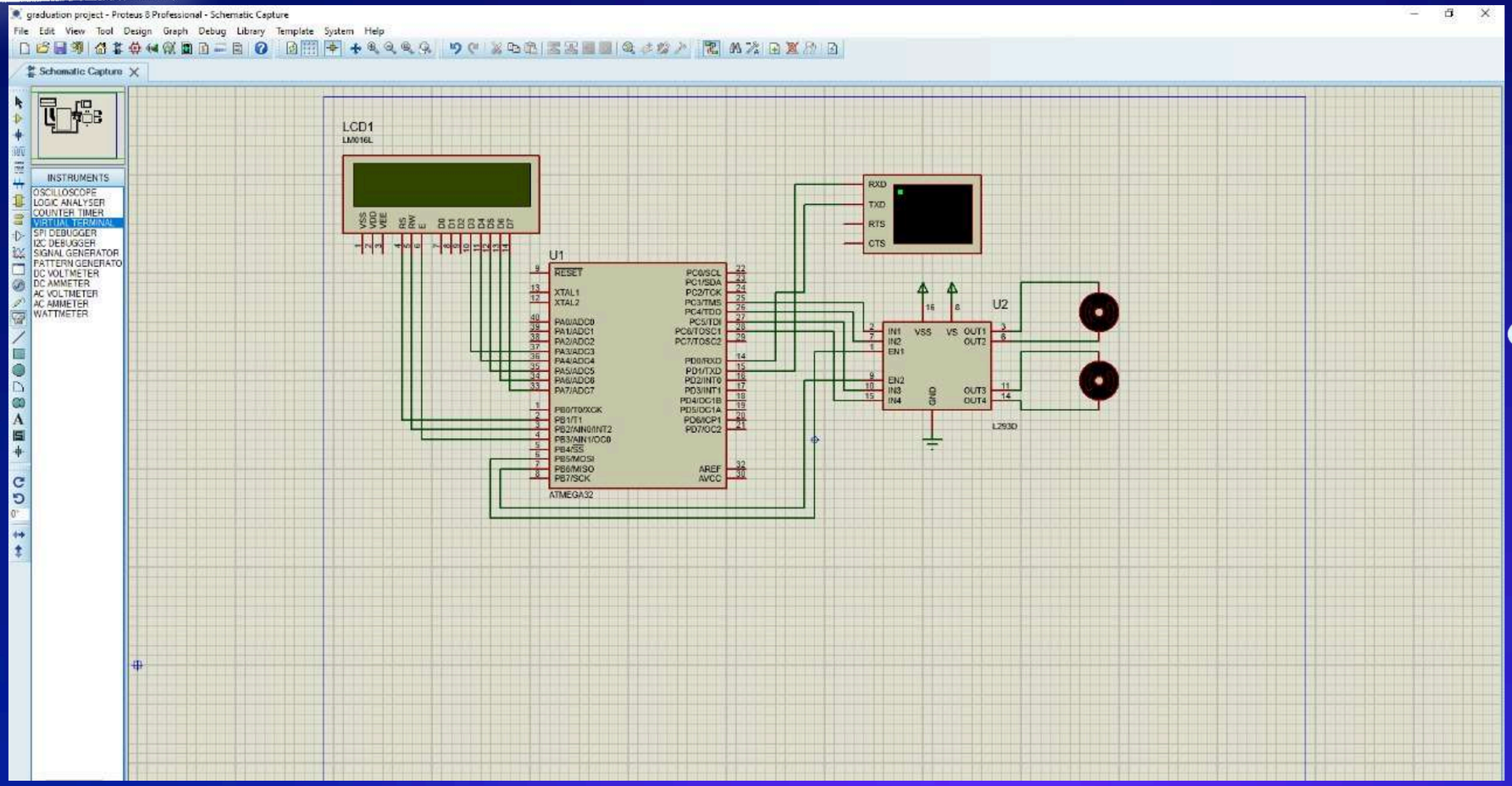
OBJECTIVE 02

GO LEFT & RIGHT

OBJECTIVE 03

GO IN TWO DIRECTION IN THE SAME TIME

PROJECT SIMULATION


graduation project - Proteus 8 Professional - Schematic Capture
File Edit View Tool Design Graph Debug Library Template System Help
Schematic Capture
INSTRUMENTS
OSCILLOSCOPE
LOGIC ANALYSER
COUNTER TIMER
VIRTUAL TERMINAL
SPI DEBUGGER
I2C DEBUGGER
SIGNAL GENERATOR
PATTERN GENERATO
DC VOLTMETER
DC AMMETER
AC VOLTMETER
AC AMMETER
WATTMETER
LCD1
LM016L
VSS VDD VEE RS RW E DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32
RXD
TXD
RTS
CTS
U2
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EN2
IN3
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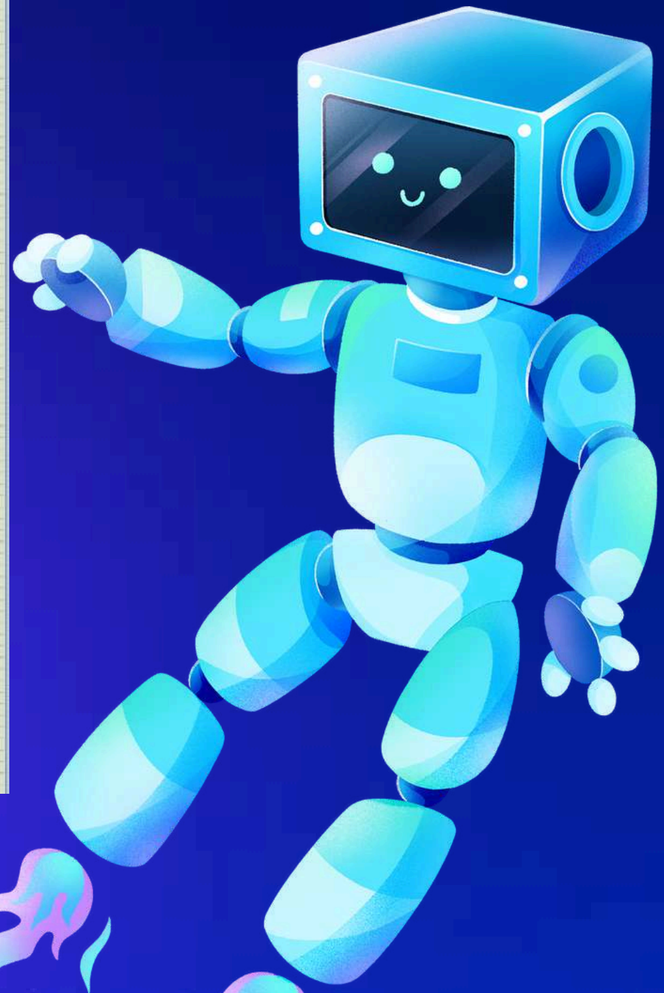
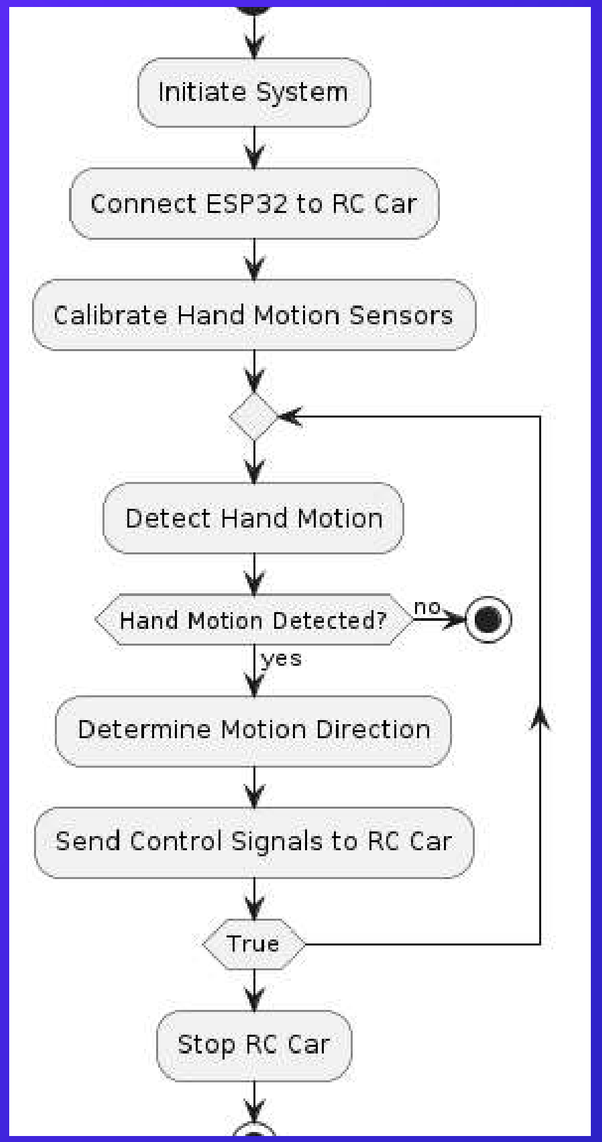
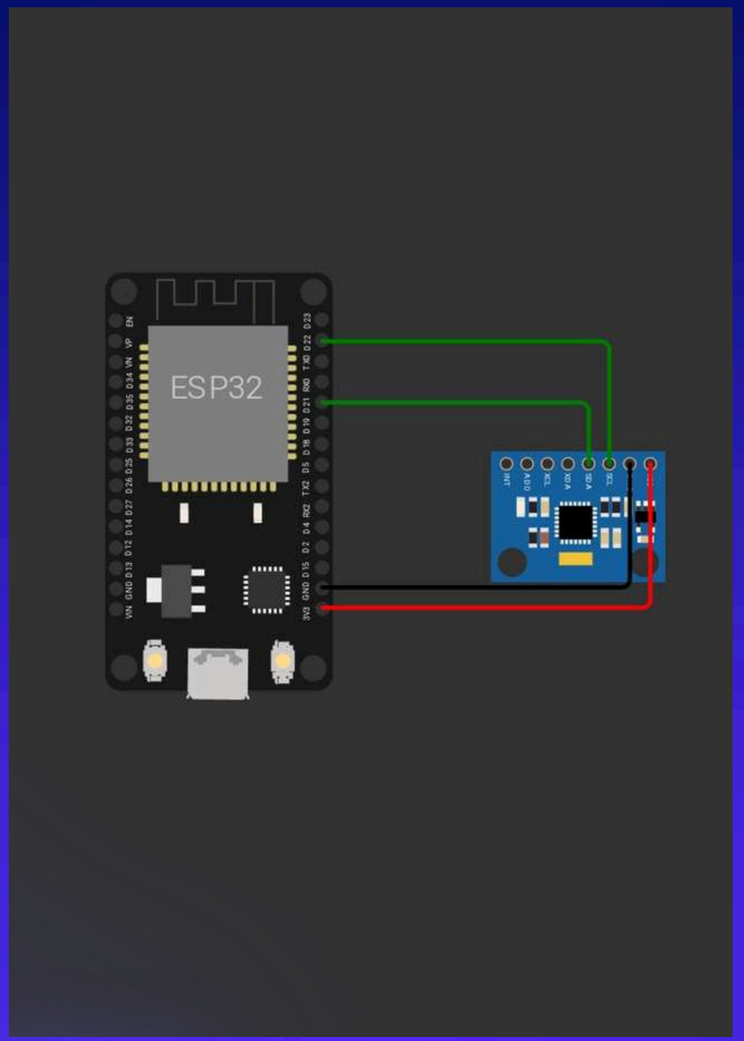
VSS
VS
GND
OUT1
OUT2
OUT3
OUT4
L293D

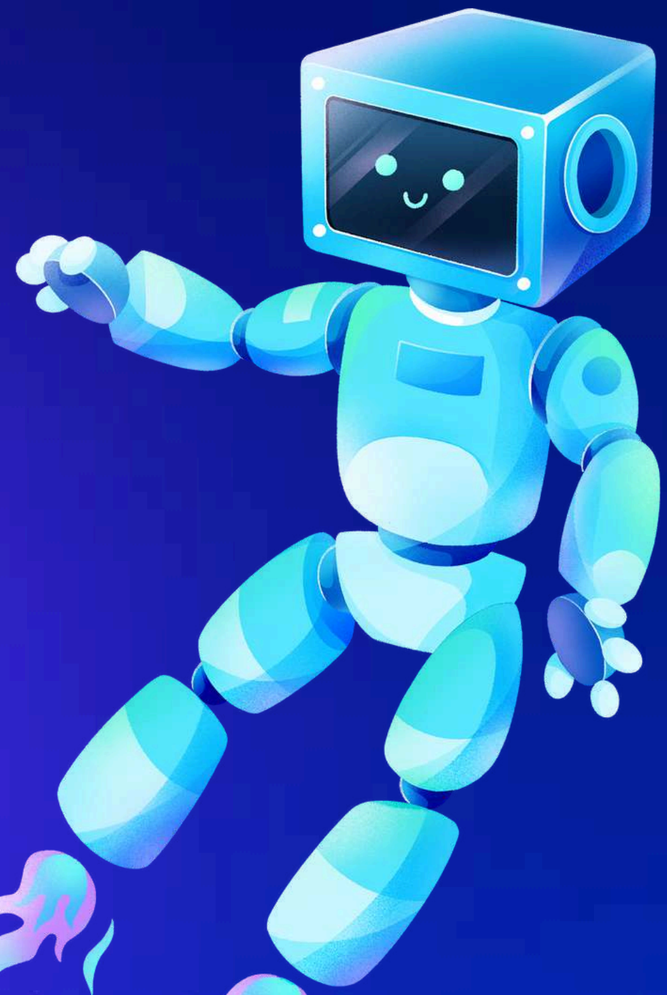


FLOWCHART


Initiate System
Connect ESP32 to RC Car
Calibrate Hand Motion Sensors
Detect Hand Motion
Hand Motion Detected?
no
yes
Determine Motion Direction
Send Control Signals to RC Car
True
Stop RC Car

HAND SIMULATION





RESULTS AND ACHIEVEMENTS

01

- we have implemented something new and added to our experience although our coding was not that good but we have did our best.

02

- we have worked as a team and tried to support each other since we are living in different governorates (Tanta, Sharkia, Belbes). Overall, we have learned from this project.

THANK YOU!