

# Design and Implementation of Smart Roulette using Gesture Control

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**Abstract-** In earlier days skateboard is a type of sport equipment that is propelled by pushing with one foot while the other remains on the board. This paper introduces the skateboard as a small electric vehicle based on gesture control with in-built battery. These no longer require the propelling of the skateboard by means of the feet; rather an electric motor propels the board, fed by Li-ion battery. The smart electric roulette as an indoor and outdoor travelling device for easy and fast movement of humans accompanied with gesture control for making the operation easier. The proposed system is going to replace the traditional cars, and it is useful to those who are not able to buy four wheeled fuel car. The proposed system can be brought in a bag and easy to carry anywhere because, it is small in size as laptops.

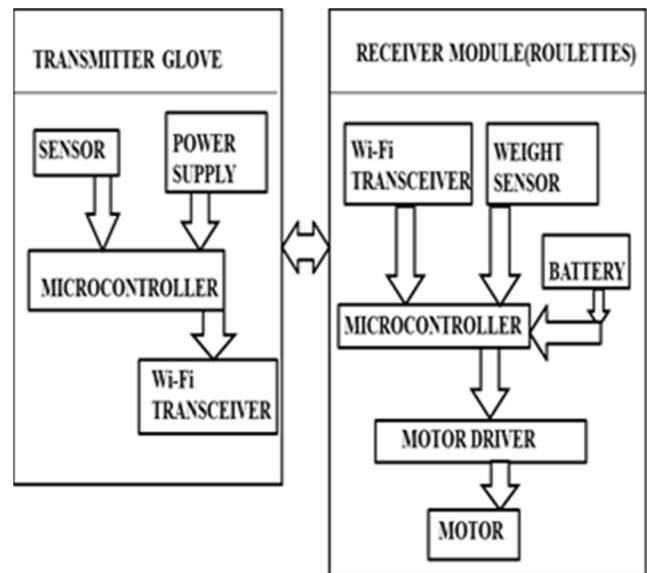
**Keywords:-** ESP8266, gesture control, walk car, NI-MH battery accelerometer.

## I. INTRODUCTION

Now-a-days fat persons and old people are unable to walk for long distance. They get tired and feel awkward, when walk for long distance. Many people feels difficult to pull or drag objects while they are moving in slope. For that purpose this paper aims to design and implement an electronic roulette along with gesture control for the purpose of moving from one place to another place instead of walking. The existing system which is known as Walk Car which is done by Cocoa motors needs special training to be operated. In Walk Car, the control is through balancing the leg pressure on the device. Another existing system, called an electric skateboard, which is heavy to carry and is not portables. In order to reduce the vehicle weight, the body of most electric skateboards is made of light fibre-glass. This makes the electric skateboard fragile in the event of even a minor collision because the fibre-glass cracks or breaks easily. Roulette overcomes all these disadvantages and in addition to that to indicate the battery storage level during the travel, weight sensor is added to it. The indication is necessary because, the battery might die-out in midway. For that purpose, the batteries are rechargeable and can be replaced if we want. Thus, this new prototype is going to be a useful prototype for the society.

## II. METHODOLOGY

### A. Block diagram



### B. System overview



### C. Construction

This project comprises of two parts Glove and roulette

#### GLOVE

The glove part consists of handglove attached with the accelerometer and wifi module

## ROULETTE

Roulette consists of metal board which is made of aluminum metal which is 2mm thick and the dimensions of the board is 30\*30 cm.

The motor is welded to the metal board and the PCB which fabricated is attached to the board.

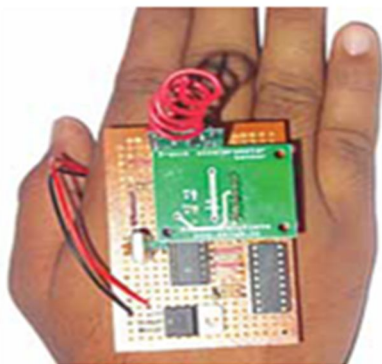
### III. PROJECT DESCRIPTION

#### A. HUMAN HAND REGION (TRANSMITTER GLOVE FOR GESTURE CONTROL)

A Gesture Controlled robot is a kind of robot which can be controlled by your hand gestures not by old buttons. The transmitter glove mainly comprises of an accelerometer, which is wearable in hand. Based on the hand-movement, the accelerometer sends the signal to the microcontroller. The microcontroller which in turn activates the signal of the communication module which is ESP8266. The ESP8266 Wi-Fi Module will send a command signal to the receiver end Wi-Fi Module which is attached in the Roulette. This will transmit an appropriate command to the robot so that it can do whatever we want.

#### B. ACCELEROMETER

Accelerometer is an electromechanical device used to measure accelerometer forces. An Accelerometer is a kind of sensor which gives an analog data while moving in X,Y,Z direction or may be X,Y direction only depend's on the type of the sensor.



### IV. SOFTWARE USED

#### A. Embedded C

All the above mentioned modules are controlled by embedded C program. Once started, the modules will

continuously run and when the work is completed, whisper-quiet operation will take place. Embedded C is a set of language extensions for the C Programming language by the C Standards committee to address commonality issues that exist between C extensions for different embedded systems. Traditionally, embedded C programming requires non standard extensions to the C language in order to support exotic features such as fixed point Arithmetic and basic I/O operations. Embedded C uses most of the syntax and semantics of standard C. It is small and reasonably simpler to learn, understand, program and debug. In comparison with assembly, C code written is more reliable and easy, more portable between different systems. C compilers are available for almost all embedded devices in use today. C has the advantage of processor independence i.e. it is independent of the kind of controller or processors used, and is not specific to any particular microprocessor/ microcontroller or any system.

#### B. PIC Microcontroller

A microcontroller is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. Microcontrollers are designed for embedded applications, in contrast to the computers or other general purpose applications. Microcontrollers are used in automatically controlled products and devices. PIC defined as (Programmable Interface Microcontroller) is used here to perform the various modules. Based on the embedded C program it takes control over the modules.

### V. CONCLUSION

The gesture based control is more advantageous because it develops effective interaction between man and machine. Thus the control of roulette using gesture based recognition provides ease of operation. The features of this vehicle include reduced cost, improved speed, less weight, small size and easy operation.

The proposed device can be used for multiple purposes like transportation of human, move heavy weights limited to a range of 120kg. this project is more useful for elders, patients and physically challenged people.

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