CAR AUTOMATION

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Graduation Project

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ABSTRACT

This Project mainly aims to automate our regular mechanical car by using two boards Raspberry Pi 3 & ATmega32.

Let's start from deepest part of the project – ATmega32 – which is part of field called Embedded Systems in this part the previously mentioned board will be responsible to make car take basic actions like moving, rotating, and controlling speed plus it will be ready for any urgent interrupt like the car close to crush a wall so immediately it will take a signal from the main board -Raspberry Pi 3 – to take an action at a time which we can call RTOS.

As we are talking about the main board which is Raspberry Pi 3 this board will be responsible for transmitting signal to ATmega32 to take the proper action but How?

By using a sensing device which can be Lidar in modern cars but as known it expensive, so we decided to use camera instead, we will use it to inform us about the surrounded view like cars, barriers, etc….

According to the situation of the surrounded view Raspberry Pi 3 will transmit signal to ATmega32 to take the action and every signal will treated as an interrupt to achieve RTOS purpose.

In addition to the previous we can't make a car without security system that can guarantee safety of car from anyone tries to steal it, so we decided to make camera recognize every face – except the owner face - then it will send a message through mobile application to the owner in case anyone tried to open the car.

MAIN COMPONENTS

1. Raspberry Pi 3
2. ATmega32
3. USBasp (AVR Burner) (Optional)
4. Camera
5. PCB
6. Male-Female Connection Caples
7. DC-Motors
8. LM 298N
9. Car Body (3D-Printing)
10. Wheels
11. Shafts