Graduation Project Main Points

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

2. Software
    1. Raspberry Pi 3
        1. Computer Vision
            - Full Body Detection

                It aims to detect the car owner’s body to make car follow him.
            - Car Detection

                Case another car detected raspberry pi will send signal to atmega32 to take an action(Stop, Reduce Speed, etc..).
            - Wall Detection
            - Distance Calculation
            - Security Alarm

                Case another guy detected a message will be send to car owner through any social app using Server Connection.
        2. Car Owner Info
            - Full Body Samples
            - Name
        3. RTOS

            This will handle the time sequence of all software operations.

4. Server Connection

   A link point between raspberry pi and the real server in this will upload data to server Message body should contain (Suspicious Guy Picture, Time, Date).

2. ATmega32

1. Car Control Functions

   Car should react according to received distance.

- Speed
- Move Forward
- Move Backward
- Move Right
- Move Left
- Move Forward Right
- Move Forward Left
- Move Backward Right
- Move Backward Left
- Stop

2. RTOS

- External Interrupts

  When raspberry pi transmit signal to atmega32 it will cause interrupt.
- Schedule Tasks
- Timer Functions

3. Communication Protocol
    1. Implementing UART Driver in Both Boards
    2. Raspberry Pi Should Transmit Data (Distance, Function Signal) to ATmega32 Every Specific Time

4. Communication App

    Android app that will show security message in chat like this data provided will be the time, date, suspicious guy picture