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Remote monitoring and controlling of an automobile system using NodeMCU

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Developing of remote monitoring and control systems for vehicles has been a significant concern in the automobile industry. It may be quite useful if we can monitor and track the movements of the vehicles remotely. This will help in the case of vehicle thefts. Further, if the vehicle key is not physically available, it is better if we can have a method to unlock the car and start the journey. There are vehicle tracking systems in the market. Howevr, their customization, investment and system reliability are few of the concerns for the system users. This paper presents design and implementation of a remote monitoring and controlling system for vehicles. An embedded remote controlling (doors unlocking and locking, park lights, power windows, engine start etc.) and monitoring system were designed and installed in a real car. The remote controlling was achieved using mobile Wi-Fi and Android applications of smart phones. Android Studio based mobile application sends control commands to the NodeMCU device through a Wi-Fi network. Then the microcontroller mounted in the vehicle responded to these incoming commands. A GPS based position tracker system was integrated using Internet of Things (IoT) and Wi-Fi enabled module and NodeMCU. The monitoring system also provided the vehicle background information like temperature and humidity. The mobile application was developed using the firebase database which acts as a medium for data transfer and visualization. This technology will help the user to remotely control and track their vehicles using a mobile application.

Keywords: Automobile system; Firebase; IoT; NodeMCU board