

## **AUTOMATIC RIDE HEIGHT ADJUSTMENT BASED ON TERRAIN**

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The main objective is to develop a smart automatic suspension system that helps to minimize the road irregularities that causes damage and also to increase performance and stability of the vehicle at high speeds. This system is aimed to improve vehicle performance on all terrain conditions from rough to flat surfaces. The central idea is based on modifying the normal passive suspension system into a raspberryPi controlled active suspension system simply by adding few components such as IR sensor and a camera. The structure of ride height adjusting system is first analyzed, and then the obstacle is detected through an IR sensor which is captured by the camera. These signals are given through GPIO pins to the raspberry Pi that controls the movement of the active suspension using open-source software (Raspbian). Future applications of this design are expected to improve the performance characteristics of vehicles of all sizes, ranging from mobile robots to automobiles. In addition to scalability, the advantage of our design is the on-the-fly adaptability, which enables adjustments in suspension performance for the terrain or obstacle being traversed.