

عنوان مقاله:

Vehicle Suspension Inspection by Stewart Robot

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خلاصه مقاله:

The suspension system of a vehicle is one of the most important parts which is involved in the process of vehicle designing. When a vehicle suspension system is designed, the evaluation of its performance against the road disturbances such as shocks and bumps are very important. The most commonly used systems consist of four hydraulic Jacks with mobility in vertical line with low speed and low exactitude. This paper offers a new mechanism for inspecting the suspension system of a vehicle using a parallel robot called Stewart. This robot is a special kind of parallel robots with capability of movements in different directions with high speed, accuracy and repeatability. In this paper the suspension system is evaluated on a quarter model of a simulated vehicle with control and guidance of Stewart robot using PID controller. The Stewart robot simulates the isolated and uneven bumps on a flat road in order to evaluate the given suspension system, and to investigate some criteria such as comforting of the passengers and remaining of the vehicle on the road. The results of the simulations show that the proposed method has a high accuracy, applicability and flexibility as well as simplicity, compared to currently used mechanisms.

کلمات کلیدی:

.Vehicle suspension, Stewart robot, Quarter model of a vehicle, PID controller

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