

Genetic Algorithm Integrated Sliding Mode Control of a Vehicle

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Abstract. *The main propose of suspension systems are to isolate car body motion from the road excitations and improve the ride comfort. Hence, to control of suspension system is important both comfort and road holding. The aim of this study is to design Sliding Mode Controller tuned by Genetic Algorithm (GA) for providing smooth vertical motion of car body. Sliding mode control (SMC) has been used in many mechanical and structural systems due to its robustness, simplicity and high control performance. However, tuning optimum controller parameters for systems is still an important research area. The proposed SMC parameters have been tuned by GA with several fitness functions to get better dynamic performance. The vehicle model is excited by random road data. Then, simulation results of uncontrolled and GA integrated sliding mode controllers models are compared. The results show that vehicle model with SMC tuned by GA is effective to decrease the effects of road induced vibrations.*

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