

# SMART SYSTEM FOR VEHICLE COMFORT MONITORING AND ACTIVE SUSPENSIONS CONTROL

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**ABSTRACT:** Passengers' comfort is one of the most important characteristics of vehicles. Several aspects affects on it but suspension system is most important. Suspension systems demands include a high level balance between comfortable ride, excellent high speed directional stability and cornering performance. These demands are high and sometimes unattainable for passive suspension systems. Active suspension system can solve the problem by affecting on suspension characteristics according to real time measured driving conditions. In this paper, the device for control and prediction of the suspension is proposed. It is based on the "quarter car" model with the observer, designed to reconstruct the immeasurable states from the available output measurement.

**KEY WORDS:** active suspension system, Android, optimal control, reduced-order observer

## PAMETNI SISTEM ZA MERENJE UDOBNOSTI VOZILA I AKTIVNU KONTROLU VEŠANJA

**REZIME:** Udobnost putnika je jedna od najvažnijih karakteristika vozila. Nekoliko aspekata utiču na udobnost ali sistemi vešanja su najvažniji. Projektovanje sistema vešanja zahteva balans između udobne vožnje, odlične upravljivosti pri velikim brzinama i skretanju. Ovi zahtevi su veoma veliki i ponekad nemogući za pasivne sisteme vešanja. Aktivni sistemi vešanja mogu da reše ovaj problem uticajući na karakteristike sistema vešanja u realnom vremenu u zavisnosti od uslova vožnje. U ovom radu, sistem za kontrolu i predikciju vešanja je predložen. Zasnovan je na „četrvtinskom“ modelu vozila sa observerom, dizajniran da rekonstruiše nemerljiva stanja na osnovu dostupnih rezultata merenja.

**KLJUČNE REČI:** aktivna kontrola vešanja, Android, optimalna kontrola, redukovani observer

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