






Ride Comfort Assessment of a Sitting Pregnant Women During Cornering: Autonomous Vehicle Simulation Maneuvering Analysis



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Abstract Exposure of continuous vibrations toward the human body from a moving vehicle could reduce human comfort, provoke motion sickness, and affect a human's health directly. The effect will be catastrophic for future autonomous vehicle implementation if the effect is not widely studied since the role of driver will be handled by the computer. In this study, Smart Campus Autonomous Vehicle (SCAV) simulation platform is coupled with a pregnant women biodynamic model to investigate the human body dynamic response to induced vibrations and assess comfort and motion sickness. The combined models are used to investigate the impact on the occupant's head vertical accelerations from the accelerations induced by the vehicle movement. Real simulation platform by using Smart Campus Autonomous Vehicle (SCAV) is used to obtain vehicle acceleration data that is used as an input for pregnant human biodynamic model. From this combination, the vibrational effect on the human head can be obtained depending on the vehicle movement. Finally, the responses of head acceleration is obtained, and comfort and motion sickness incidence are assessed by using relevant models mentioned in the literature.

Keywords Vibration · Vehicle · Human biodynamic model · Comfort

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