Proceedings of the 2017 Winter Simulation Conference
W. K. V. Chan, A. D'Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page, eds.

CONNECTED AUTONOMOUS VEHICLE (CAV) SIMULATION USING PTV VISSIM

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ABSTRACT

Currently there is a lack of detailed understanding regarding the effect of autonomous vehicles on traffic operations and transportation infrastructure. PTV Vissim, the worlds leading microscopic traffic simulation tool, provides a virtual testbed to evaluate the coexistence of autonomous and conventional vehicles either in the transition phase or when vehicle fleets are fully autonomous. Vissim traffic simulation is increasingly being employed to address the evidence gap around the potential impacts of disruptive technologies, such as connected autonomous vehicles, on traffic flow and capacity. Incorporating hardware in the loop testing allows detailed representation of autonomous vehicle control algorithms, sensor and communication protocols to be simulated within a realistic virtual traffic environment. Simulating varying penetration rates of autonomous vehicles, and different behavioral characteristics such as as platooning, vehicle to vehicle communication and vehicle to infrastructure communication, has demonstrated the opportunity to reduce travel times by 11% and delays by more than 40%.
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