

Measuring the Latency of the NADS-1 Driving Simulator

Omar Ahmad

ABSTRACT

A simulator's latency or transport delay refers to the time delay between an operator input and the associated the visual output. In the world of driving simulators, latency measures how much time elapses between a specific driving input (steering, brake, throttle) and visually being able to see the result of that input on the visual display. The NADS-1 has recently undergone several enhancements that we anticipate will result in lower latency. This paper will describe the methodology that we use to measure the latency. We will compare and contrast the latency of the updated system against latency values from a decade ago. Will then discuss the reasons for the differences in latency between the old and the updated system.

BIO

PRIMARY AUTHOR

Mr. Ahmad has been working in the driving simulation field since 1994 and has extensive experience in the areas of scenario authoring, real-time virtual environments, autonomous agent behavior modeling, and extracting measures from simulator data. His Master's thesis focused on developing a framework for specifying the behavior of intelligent agents in a virtual environment. He applied this research to modeling the behavior of intelligent traffic in a driving simulator as a Graduate Assistant and Project Analyst at the Iowa Driving Simulator. Mr. Ahmad was part of the software engineering team that wrote the software for the National Advanced Driving Simulator. Mr. Ahmad has served as the project manager for a number of simulation-based research studies related to studying vehicle safety and human performance in the areas of active safety, impairment, driver distraction and novice drivers. He currently serves in the role of Director of Operations and is actively engaged in work related to virtual proving grounds for connected and automated vehicles, multi-site simulation studies, and matching simulator fidelity requirements to various applications. Mr. Ahmad is Co-Chair of the National Academies Transportation Research Board Committee on Simulation and Measurement of Vehicle and Operator Performance and a member of the Committee on Motorcycles and Mopeds.