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(ICRTME -2025)

Edited by

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24th and 25th September 2025

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Evaluating the Real-World Validity of Driving Simulators: A Review of Comparative Studies

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ABSTRACT

Driving simulators are a common tool for researching driver behavior, providing practical, safe, and controlled environments. Despite their frequent use in research, there is relatively little evidence confirming their validity (i.e., how accurately they represent or reproduce real-world driving). Moreover, there is inconsistency in both the types of simulators used, and the operationalization of “real-world” driving in validations. This report was undertaken to evaluate the evidence regarding driving simulator accuracy when compared with real-world driving. The review included 44 studies reporting a direct comparison between simulated driving and on road driving in a vehicle. Measures reported for comparison varied but included mean speed, speed variability, lateral position, overall driving performance, and number of driving errors. Simulators in approximately half of the studies achieved absolute or relative validity, whereas one third produced non-valid results. To understand this further, the fidelity of simulators was considered, however this further clouded our understanding as the relationship between simulator fidelity and validity was not straightforward. The findings suggest that the reporting of driving simulator studies requires improvement, particularly around the validation evidence associated with the simulator, the specific details of the simulated driving environment, and the outputs of statistical analyses. Guidelines are proposed for future research to ensure consistency in the conduct, and reporting, of simulator-based research.

Keywords: Driving Simulator, Validity, Driver Behavior, Real-World Driving, Fidelity



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PROGRAMME SCHEDULE

Day 1 – Inaugural & Planetary Sessions

09:00	-	10:30	Registration
10:30	-	10:40	Welcome Address Dr. M. Chandrasekaran , Professor & Director
10:40	-	10:50	Presidential Address Dr. M. Bhaskaran , Vice-Chancellor (FAC)
10:50	-	11:20	Inaugural Address Dr. Siow Chun Lim Associate Professor, Multimedia University, Malaysia
11:20	-	11:30	Keynote Address Dr. Muhammad Izzat Nor Bin Ma'arof Professor, Mechanical Engineering, INTI International University, Malaysia
11:30	-	11:45	High Tea
11:45	-	13:00	Technical Session I Keynote Speaker Dr. Mahmoud Nassar Director of the Center for Innovation and Industrial Partnerships (CIIP) Mechanical Engineering, Palestine Polytechnic University, Hebron, Palestine
13:00	-	14:00	Lunch Break
14:00	-	15:15	Technical Session II Keynote Speaker Dr. Ragavanantham Shanmugam Professor & Head, Department Of Applied Engineering, Alabama, USA
15:15	-	15:30	High Tea

Day 2- Technical & Valedictory Sessions

10:30	-	11:30	Technical Session III Keynote Speaker Hamid Ziaiefar Senior Mechatronics Engineer, National Oilwell Varco, Melbourne, Australia
11:30	-	11:45	High Tea
11:45	-	13:00	Technical Session IV Keynote Speaker Dr. K. Elangovan Associate Professor, Department of Rubber And Plastic Technology, MIT, Chennai
13:00	-	14:00	Lunch Break
14:00	-	15:15	Valedictory Session
15:15	-	15:30	Vote of Thanks
15:30	-	15:45	High Tea



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