

A Game-Based Driving Learning System for Sri Lankan Driving Learners to Enrich the Awareness of Road Rules

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Traffic safety is becoming an important problem in most of the countries. Based on investigations it has been identified that the unawareness of road rules, lack of practice of sudden reactions in hazardous situations are the major causes for accidents. Though there are many driving simulators available, most of them have not addressed the road rules and hazardous incidences that a driver must be aware. Also they are lacking of a proper evaluation of the driving skills and awareness of the driver. Primary objective of the system is to provide a driving learning platform for the learners, trainers as well as evaluators to overcome the existing challenges, which has mainly focused on creating a virtual environment to facilitate the training and testing process in the local context and main areas of violating road rules and regulations by drivers are taken into account. In order to provide a realistic road environment, virtual environments are modeled based on different criteria. Artificial Intelligence techniques like non-player characters and objects, are employed. Through that, the responsiveness and intelligent behavior of the simulator has been improved. One of the major components of the simulator is the driver evaluation: a point based method defined upon the rules, road conditions and driving ethics established in the country. Further, the virtual environment provides all the road conditions available, countryside as well as the urban traffic conditions with different weather conditions. The effectiveness of the developed simulator is measured by allowing a selected group of learners to use the simulator for a specific period and assess their driving skills in a real driving environment. It can be concluded that training the learners in a virtual environment that similar to the real environment with a proper assessment of their driving skills, awareness of the rules and road signs, and the driving ethics will solve most of the problems we face today.

Keywords: Driving game, Simulator, Driving license, Road rules, Non-player characters