

Integrated GPS/INU Simulator for Enhanced Traffic Safety

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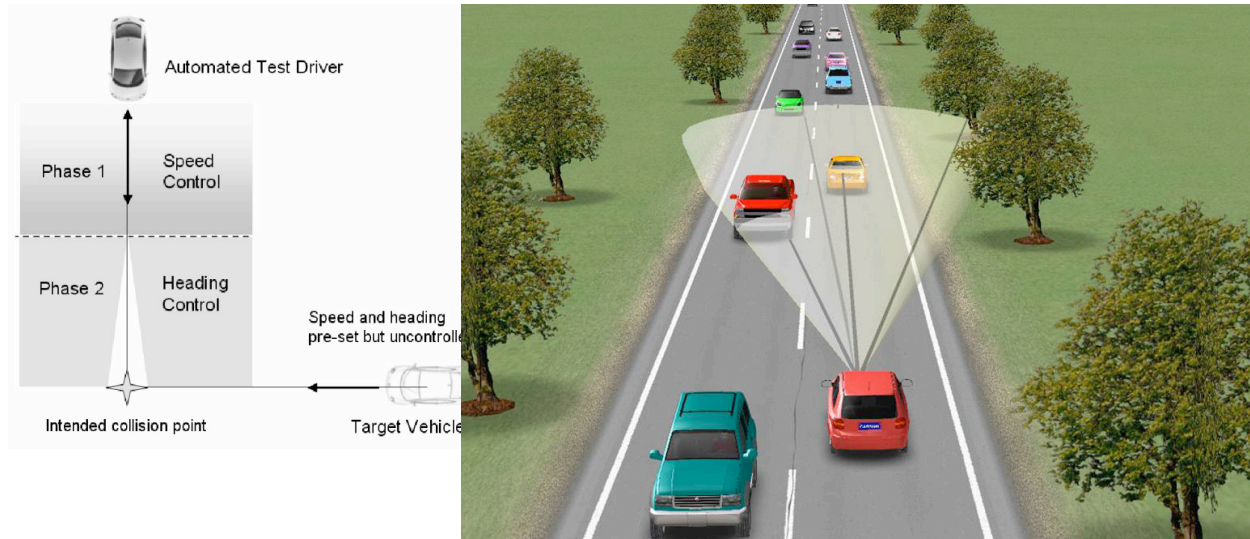


Figure 1. Road Departure Warnings for the Traffic Simulator.

Figure 2. Traffic (Accident) Scenarios CarSim.

The proposed Integrated GPS/INU Simulator for Enhanced Safety consists of the “Vehicle Dynamics Simulator”, the “GPS/INU Simulator”, the “Traffic Simulator”, the “V2V and V2I Simulator”, and the “Scenario Warning Generator”. All these modules are integrated to create an environment that allows to study the relationship between vehicle dynamics and roadway geometry and to provide an integrated design, test and evaluation tool for developing advanced concept subsystem to enhance vehicle safety at the vehicle and network levels. Several prototype GPS/INU systems are proposed to cross-validate the integrated simulation environment and to explore new concepts for enhancing vehicle safety in conjunction with and/or without the existing IntelliDrive environment. Inside the integrated simulation environment, the integrated traffic simulator through its interface to the vehicle dynamics simulator will provide the following models and associated reports: 1) A crash estimator for road departure cases, 2) a crash estimator for lane changing cases, 3) a crash estimator for signalized intersection cases, and 4) a crash estimator for sudden stop cases.