

A Framework for Distributed Simulation of Intelligent Transportation Systems

Amrish Arunachalam Kulasekaran, Master of Science in Computer Science University of Dublin, Trinity College, 2020

Supervisor: Professor Vinny Cahill

Around the world, lots of countries and people face economic, social and environmental impacts due to traffic congestion. The main reason for the congestion is the increase in traffic demand and over traffic flow in a road network. An effective and efficient solution against congestion is to utilize the road infrastructure to its full capacity. Intelligent Transportation helps (ITS) us to address congestion by continuously monitoring and regulating the traffic flow. It achieves this by establishing cooperation and coordination among the vehicles. These systems must be tested and evaluated in a realistic simulation environment before real-world deployment.

The ITS simulation framework current present is purely based on vehicular network simulation, and they lack to address distributed and real-time characteristics of ITS. This dissertation introduces a framework consisting of only Carla simulator to perform distributed ITS simulation. The feasibility of the proposed approach is evaluated by simulating customized ITS application created by extending the designed framework.