Abstract

This work proposes a microscopic model based on cellular automaton in order to simulate the behavior of vehicle traffic in a highway. Aiming towards updating the velocity of each vehicle, we consider the available space for a vehicle displacement in a certain instant as well as the possible movement of the vehicle in frontof it. The algorithm proposed is time explicit and an iterative procedure is used. Such iterative procedure was developed to avoid unreal collisions. These collisions occur when vehicles move less than expected as well as because of the adopted anteciparoty scheme. A coefficient is used in order to simulate different behaviors of the drivers. Moreover, the algorithm proposed was expanded by a multicell scheme. This multicell scheme permits considering several acceleration increments and also different types of vehicles. Furthermore, a procedure of lane change is used. Results are produced and compared with the ones descripted in the literature with different anticipation behaviors.

Keywords: cellular automata, microscopic traffic simulation, anticipatory model, multi-cell, multi-lane.