# ABSTRACT

A reactive path planner for vehicles is disclosed. The reactive path planner, based on a nominal path from A to B, generates alternative parallel paths which are displaced by a predefined lateral distance from the nominal path using constrained quintic polynomials. Constraints are imposed on the alternative paths to ensure safety and comfort based on dynamic and mechanical feasibilities of the vehicle. A cost function is applied to the nominal path and alternative paths select the path with the least cost. The reactive path planner achieves a complete path planning solution with high computational efficiency, even in highly cluttered and dynamic environments.

Fig. 7a