



A Predictive Human-inspired Path Planning Method Based on the Dynamic Wave Expansion Neural Network (DWENN)

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A new path planning strategy inspired by human path planning is proposed based on the dynamic wave expansion neural network (DWENN) for moving in dynamic environment. The proposed method performs in two phases. In first phase, a coarse path is produced by using the DWENN and a cognitive map to represent the environment configuration. In second phase, to improve the coarse path, a predictive approach is iteratively employed by combination of the locally recurrent neural network (LRNN) and DWENN to plan a motion vector in a finite prediction horizon and execute it in a control horizon. A task is intended to evaluate the performance of proposed method in crossing the street including a car as a dynamic obstacle. In this valuation, different simulations with various prediction and control horizon have been done. Our results imply that by inserting a predictive method and adjusting the prediction and control horizons, the DWENN can satisfactorily generate a collision-free path in dynamic environments.