遗传算法融合大数据的目标车辆路径规划方法

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摘　要： 针对择优路径精度不高、车辆匹配与规划效率慢问题，提出一种基于遗传算法融合大数据的目标车辆路径规划方法.利用大数据分析技术构建目标车辆路径规划层次架构，确定目标车辆路径规划的约束条件；在大数据分析约束下，采用遗传算法编码染色体，采取种群初始化手段，提升遗传算子的搜寻速率，建立目标车辆路径的适应值函数；最后按照遗传算法融合大数据基因操作，利用适应值及变异算子对筛选后子路径进行筛选变异，确定最终路径坐标，实现目标车辆路径规划.仿真实验证明，所提方法可以大幅提升车辆运行效率，路径规划精度较高，且具有很好的收敛性.

关键词： 遗传算法融合大数据；路径规划；适应值函数；外罚函数法

Target vehicle path planning method based on big data fusion of genetic algorithm

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Abstract： Aiming at the problems of low accuracy of optimal path selection and slow efficiency of vehicle matching and planning, a method of target vehicle path planning based on big data fusion of genetic algorithm is proposed. Using big data analysis technology to build the hierarchical structure of target vehicle path planning and determine the constraints of target vehicle path planning;Under the constraints of big data analysis, genetic algorithm is used to encode chromosomes, and population initialization is used to improve the search speed of genetic operators and establish the fitness function of the target vehicle path;Finally, according to the genetic algorithm fusion big data gene operation, the adaptive value and mutation operator are used to screen and mutate the selected sub path, determine the final path coordinates, and realize the target vehicle path planning.Simulation results show that the proposed method can greatly improve the efficiency of vehicle operation, the accuracy of path planning is high, and has good convergence.

Key words： Genetic algorithm fusion big data; path planning; adaptive function; external penalty function method

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