

## Application of Heuristic Integration Ant Colony Optimization in Path Planning

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**Abstract :** This paper mainly studies the path planning method based on ant colony optimization (ACO), and proposes heuristic integration ant colony optimization (HIACO). This paper not only analyzes and optimizes the principle, but also simulates and analyzes the parameters related to the application of HIACO in path planning. Compared with the original algorithm, the improved algorithm optimizes probability formula, tabu table mechanism and updating mechanism, and introduces more reasonable heuristic factors. The optimized HIACO not only draws on the excellent ideas of the original algorithm, but also solves the problems of premature convergence, convergence to the sub optimal solution and improper exploration to some extent. HIACO can be used to achieve better simulation results and achieve the desired optimization. Combined with the probability formula and update formula, several parameters of HIACO are tested. This paper proves the principle of the HIACO and gives the best parameter range in the research of path planning.

**Keywords :** ant colony optimization, heuristic integration, path planning, probability formula

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