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Real Time Neural Network Path Planning Algorithm for Robot

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Abstract: *The emergence of robots not only changed the traditional industrial production mode, but also greatly promoted the progress of social civilization. Whether in daily life or in industrial production practice, the technical level of robots is improving every day, which emphasizes the high level of national science and technology. Robot path planning technology is an important part of robot research. The purpose of this paper is to focus on the research of robot path planning algorithm, learning and in-depth development. This paper introduces the discovery and communication of robot real-time neural network planning algorithm in machine learning, and analyzes and studies it. In order to study the robot real-time neural network path planning algorithm, through the experimental comparison of different algorithms, focus on exploring the effect of different algorithms on path planning. The research results show that the algorithm speed of robot on real-time network path is 24% higher than that of normal network path algorithm, and can be increased to 30% after deep mining, and the efficiency of machine algorithm can be increased to 35% under more complete algorithm. Therefore, the robot real-time neural network path planning algorithm can complete the task more efficiently.*

Keywords: *Path Planning, Algorithm Speed, Computing Advantage, Deep Mining*

1. Introduction

In the long history of human development, there will be many landmark inventions and creations that can promote human progress and social development. One of the greatest inventions of human beings in the 20th century is robot, which fully embodies human wisdom. With the rapid development of information industry and artificial intelligence, robot research has also undergone great changes. It marks a great progress in science and technology. The emergence of robots not only changed the traditional industrial production mode, but also greatly promoted the progress of social civilization. Whether in daily life or in industrial production practice, the technical level of robots is improving every day, which emphasizes the high level of national science and technology. Different countries have different interpretations of robots, but in general, robots are programmed to perform related tasks. In other words, a robot is a machine that performs tasks assigned by program control.

Route planning technology plays a vital role in the movement of robots. Experts and scholars from all walks of life have conducted in-depth research on route planning techniques, and the theoretical points raised have gradually become richer. This is necessary to make the theory more feasible and more specific [1]. To improve the essential impact of planning roads, it is necessary to discuss technical route planning in depth, find an effective method or propose an improved algorithm, which can greatly promote the development of robot technology and is a very important robot for the entire field [2]. The robot controls the direction of the failure gradient of the discrete excitation and punishment function. The task is to quickly and effectively bring the child closer to the robot's target. Arrival and simulation, the simulation results show the efficiency and practicability of methods in complex environments with static and dynamic objects, especially in real-time environments [3].

In order to explore different path planning algorithms, this article consulted a lot of related materials. Among them, Kim established a model to develop the autonomous movement of industrial robots very quickly. The inertial navigation system adept mobile robot solves many algorithmic problems [4]. Wang also improved the association rule mining algorithm, established the initial APRIORI algorithm, and performed a series of analysis on the bottleneck of the APRIORI algorithm [5]. Pradhan introduced the application principles of neural network path planning algorithms in the field of robots, and pointed

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out that adept lynx mobile robot is an autonomous navigation platform based on neural network path planning algorithms [6]. Woo achieved road planning and autonomous prevention of obstacles through laser positioning and environmental exploration, and discussed and analyzed the advantages and disadvantages of this commonly used association rule algorithm [7]. Atta proposed an ant colony algorithm. With the continuous in-depth study of ant colony algorithm by future generations, the ant colony algorithm has been continuously improved and optimized, becoming more sophisticated and mature [8].

In the research of robot real-time neural network path planning algorithm, this paper summarizes and analyzes a large number of predecessors' research experience and achievements, in addition, this paper has carried out some innovative applications, the specific innovation has the following two points: first, because using any of the algorithms alone, it cannot achieve good path planning effect [3]. Therefore, a hybrid path planning algorithm is designed and verified by simulation. Secondly, the relationship between the whole path modeling and robot motion planning is studied. This paper summarizes the advantages and disadvantages of different environmental modeling methods, analyzes the influence of sub regional decomposition, intra-regional coverage and avoidance on the characteristics of planned comprehensive coverage group method, calculates and simulates the method of biological stimulation neural network, and analyzes its existing problems.

2. Robot Real-Time Neural Network Path Planning Algorithm

2.1. Path Planning Algorithm

The robot system is a complex artificial system, and it is difficult to process the model correctly. The origin of the genetic factor algorithm is the research result of the artificial adaptation system, so the intelligent control of the robot is a naturally important field of genetic factor algorithm [9]. When the mobile robot runs according to a predetermined initial path, when a new obstacle appears in the environment and covers the planned path, the path must be planned in real time. This article suggests that mobile robots can keep abreast of new obstacles, thus saving a lot of time for planning routes. The key to this chapter is to determine the starting point and goal of the local path. The radius of the obstacle represents the scale of the threat. Since the radius of the obstacle is different, in order to accurately measure the result of the path, we think we cannot ignore its radius. The unknown global environment of this article, due to the existence of dynamic obstacles based on the shortcut principle, the overall goal is divided into a series of sub-goals with the characteristics of high-speed parallel computing neural network. Penalty function, create a neural network to describe the environment, and introduce optional parameters to guide the negative gradient, control the robot to quickly execute the sub-target, and finally perform the path task. Simulation results show that the algorithm is effective and runs in real time [10]. The main problem that must be solved when planning the path of the robot is that when the robot is in the environment of scattered obstacles and the initial and final points of the robot, the path finding algorithm is used to find the possible path of the robot from the start point to the end point, without the need encounter any obstacles. The genetic algorithm has been extensively studied. It provides a general framework for solving complex system optimization problems, suitable for mobile robot path planning, joint robot orbit planning, robot inverse motion solutions, etc. It has a strong ability to solve problems [11]. Therefore, the processing of big data analysis and mining mainly includes data mining, big data analysis and preprocessing, and result statistics. Analysis and data representation, the specific details of the data mining process are shown in Figure 1.

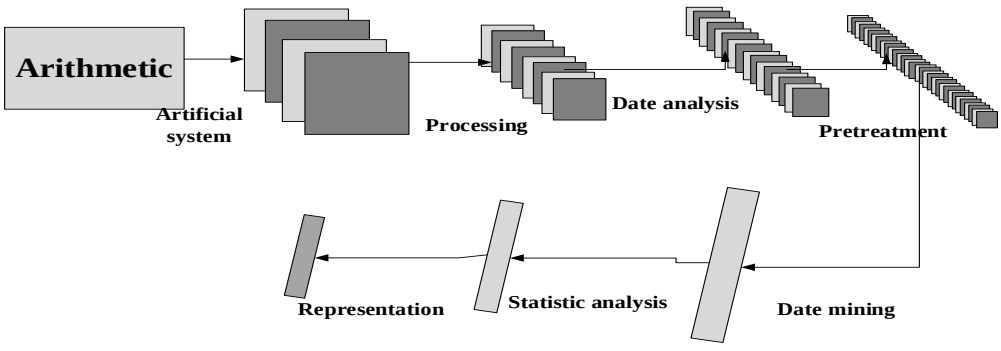

Figure 1: The specific process of path planning algorithm

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The process of planning algorithm includes the following steps:

(1) Provide framework

By introducing the path planning algorithm, it is not difficult to find that the current hotspot project belongs to the intelligent path planning method. The traditional path planning method is the help method of the group intelligent path planning method [12]. Models and other steps, current research on multiple robot path planning methods will simultaneously consider multiple path optimization indexes.

(2) Data analysis

Multiple goals of a multi-objective optimization problem are converted to a single goal to some extent, so a single-objective optimization method is used to solve this problem. Using the multi-objective optimization method based on the dominant relationship, the multi-objective optimization problem is solved immediately, and the optimization problem is best solved. At present, the technical system for processing big data is still immature and perfect [13]. Due to complex data, huge data diversity and scale, existing large-scale data processing technologies and system platforms still need to continue to study and improve technical issues, including: distributed big data storage technology and system processing platforms and system platforms, parallel, high-efficiency parallel algorithm design, easy-to-use big data analysis methods and tools, etc.

(3) Data processing

When the mined data comes from data sources stored in different structures and the amount of data is very large, the data mining technology faces huge challenges. At this point, data reduction techniques can help [14]. Given the integrity of the original data, data reduction techniques can be summarized based on the overall characteristics of the data set. This derivation method helps to reduce the data set to reduce the size of the data and ensure the accuracy of the mining results.

(4) Data statistics

The outdoor mobile terminal location method based on machine training does not need to add any specific hardware to the mobile terminal or mobile communication network. Only a certain amount of information about the receiving level of mobile terminals is needed to achieve higher positioning accuracy, and the computational complexity is lower than that of GPS. However, the modern positioning method based on machine training still has great opportunities to improve the accuracy of positioning and computational difficulties, and cannot fully meet the real-time positioning requirements of all simultaneous communication in a larger range, and the cost of computing equipment is lower. This paper aims to improve the method of outdoor mobile terminal installation based on existing achievements, greatly improve its accuracy and speed, and make it better meet the practical requirements.

(5) Data mining

The continued popularity of computers and the continuous development of the Internet have promoted the birth and rapid expansion of social networks. Social networks have become an indispensable part of most people's lives [15]. As an information platform for human interaction, every moment on social media generates a large amount of data. At present, social media accumulates a large number of personal information and data of users. Based on these data analysis: use will lead to huge economic and social benefits, so analyze social networks Become a popular direction of data mining research.

(6) Data representation

Genetic algorithm is the standard of biological natural selection mechanism and random search algorithm. It simulates natural selection, survival of the fittest, evolution of parallel search tasks, and determines the global random search space. He said that the best way to solve the problem of genetic algorithm optimization of populations is to use. Target organization instead of using optimization tools with implicit parallel algorithm and genetic algorithm characteristics, each generation will do the same thing in replication, crossover and mutation. Use only the applicable degree function, do not ask for other prerequisites or auxiliary information, because this is the goal. Restricted functions and conditions are not so restrictive, nor do they need to be distinguished or continuum [16]. In addition, the search scope covers the space of all independent variables, and it is more likely to seek the best global solution after iteration. Genetic algorithms use random transformation rules instead of deterministic rules, so genetic algorithms can effectively solve complex problems of optimizing nonlinear problems.

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2.2. Common Network Path Planning Algorithms

Road planning is to provide drivers with optimal roads, and is also an important part of optimal management, (intelligent) robots, intelligent transportation and other artificial intelligence technologies. Due to different areas of path planning, path planning algorithms are also different. This section describes the basic knowledge related to path planning algorithms [17]. Currently, there are many different route plans based on different classification criteria. According to different moving targets, it can be divided into route planning from one point to another and fully covered route planning. In the course of research, this paper implemented a fast-expanding random tree algorithm and successfully applied it to a robot path planning algorithm in an uncertain environment [18]. Simulation experiments show that the algorithm has the advantage of searching the unknown field quickly, and it is not easy to hit the local minimum. Then, by rapidly expanding the random tree algorithm, it was improved and implemented a fast-expanding random tree binding algorithm, which was also successfully applied to plan the path of the robot under uncertain conditions. Simulation experiments show that the performance of the algorithm is better than that of the rapidly expanding random tree, and its search speed is higher. The benefits of the rapidly expanding random tree are integrated [19].

(1) Heuristic search algorithm

The key step of heuristic search is to determine the next testable node. Different methods will shape different search strategies. Heuristic search is based on heuristic information, which leads the search in the most promising direction. This search method can not only improve the search efficiency, but also reduce the difficulty of the search problem [20]. Algorithm* is a typical heuristic search algorithm. Applying algorithm, A* to the planned path can effectively find the best path. The traditional A* algorithm sometimes produces too many expansion nodes in the search process, thereby reducing the search efficiency [21]. In order to improve the search efficiency of algorithm A, a two-way search A algorithm is introduced in the literature. This method combines a direct search from the start point to the end point, and a reverse search from the end point to the start point. Literature improves the efficiency of search algorithms by changing the algorithm evaluation function A*. The Euclidean distance formula and the formula for calculating the average value of data objects are shown in 1,2.

$$X_j^l = f(\sum_{i \in M_j} X_j^{l-1} * K_{ij}^l + b_j^l) \tag{1}$$

$$F_j = (\sum_{k=1}^{n} d_k V_N) + h_T * (D - h_j) S \tag{2}$$

Where f is the distance formula; s is the average calculation formula of the data object.

(2) Floyd algorithm

Floyd's algorithm, also known as interpolation method, is used to find the shortest path between multiple sources in a weighted graph. The Floyd algorithm is suitable for the shortest path between any two points, and it is also suitable for calculating the transitive closure of the directional graph. This is a simple and effective algorithm. Due to a compact structure, the three-cycle planning efficiency is higher than the density map dextran algorithm [22]. For the features of a smaller number of vertices and higher-density vertices in the environment graph model listed in this article. Freud's algorithm was selected as the algorithm for drawing paths under the internal environment modeling graph. The Floyd algorithm is mainly used to find the shortest path with multiple sources and non-negative components, and uses the USES matrix to record the distance between a pair of points. The Floyd algorithm has time complexity 30 (V) and space complexity. The calculation formulas commonly used by the algorithm are shown in 3 and 4.

$$N_k = (S_k - T_k) * F_k * (N - c_k) k^N = 2^{ST} \tag{3}$$

$$FV = X_A N(d_1) - e^{-rt} BN(d_2) \tag{4}$$

Where l is the sum of item sets in Floyd algorithm and FV is the confidence threshold.

(3) SVM algorithm

SVM solves the problem of intelligent data analysis algorithm very effectively. It was originally proposed by vaping in the 1990s. After years of theoretical research and engineering development, this method has made tremendous progress in the development of algorithmic system theory and

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implementation. By designing different scenarios for different algorithm tasks, this method can effectively overcome the problems of intelligence analysis and training in the catastrophic dimension. SVM can be divided into two categories, one is the support vector classification machine, and the other is the support vector regression machine. Since the regression problem can be transformed into a classification problem, the support vector classification and the support vector regression machine are theoretically consistent [23]. In order to use simpler linear partitions to solve more general non-linear single problems, the above linear vector support machine needs to be further expanded. If a given set of training materials to be classified is not linearly separable or approximately linearly separable, you can consider searching a map that maps all points of the samples in the training set to Hilbert space, so that the new Hilbert space. The training set shown in becomes linearly separable or almost linearly separable, then in this Hilbert space, a linear machine with support vectors is used to solve the linear division of the displayed training set, and finally, the Hilbert. The linear division obtained in the space is mapped back to the original space to obtain the nonlinear division space of the original nonlinear decomposition problem. The commonly used calculation formula of SVM algorithm is shown in 5,6.

$$S(u)=\sum_{k=0}^{n} C_n^k u^{n-k} v^{(k)} \tag{5}$$

$$R_n(x)=\frac{f^{(n+1)}(\omega\mu\kappa)}{(n+1)!}(x-x_0)^{n+1} \tag{6}$$

Where s (U) represents the importance of the index and X is the number of layers.

3. Application of Robot Network Algorithm

3.1. Application of Robot Neural Network Path Algorithm

In practical applications, choosing the grid size as the position of the secondary reference vector machine determines the final accuracy of the position. For grid division, the higher the positioning accuracy, the less, but due to the increase in the total number of problem classification categories, the calculation complexity of the positioning stage will increase and the side length grid division will decrease, and the positioning accuracy will decrease. The election is the size of the square grid in the second layer [24]. In order to require accuracy and determine the size of the primary pivot vector, a decision must be made to minimize the total number of primary classification targets and the number of secondary classification problems. In principle, the minimization result is selected during the positioning phase [25]. After dividing the secondary grid into the second pivot vector machine position, each grid must be separately numbered for the classification task classification. To facilitate subsequent classification of training data, the directions of longitude and latitude can be used as priorities, and the directions of longitude and latitude are numbered in the order of small and large. This number may allow to label the learning data, and the learning longitude is placed in the third chapter of machine learning. In a simple network location, category identification can be obtained directly without determining the mapping relationship between debt and latitude and numbers. The calculation formula of the set mapping is shown in 7.

$$T=\sum_{J+1}^{V-N}\frac{D_{\mathrm{f}}}{D} * \mathrm{Info}\ （D_{\mathrm{f}}）+\sum_{N}^{V} D^2 \tag{7}$$

Where t is the sum of item sets in Apriori algorithm and D is the confidence threshold.

3.2. Construction of Neural Network Path

Planning robot path is the process of creating models for predetermined robot tasks and solving the actual environment of optimal path. The quality of path planning algorithm directly determines whether the robot can successfully complete the planned tasks. As for robot path planning, it can be divided into global path planning and local path planning in unknown environment, which depends on the understanding of the environment. In the planning process, everyone represents the correct path, while the individual measurement represents the number of path segments from the starting point to the target point. In the practical process of cartesian solution, coordinates and polar coordinates are used for environmental coordinates. As shown in Table 1, the planning path conversion index is gradually improved.

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Table 1: Path planning conversion index

Algorithm	Test	Speed	Optimize
Coordinate	Tic-tac-toe	955	9
Surroundings	Floyd	146	9
Measuring	SVM	300	12

3.3. Planning Path Design Idea

It is not only necessary to group various single robot routes, but also to consider them as a whole, so as to organize multiple robots according to the above multi robot architecture. The current two ideas around the multi robot program are centralized and decentralized. Centralized path planning is to coordinate the centralized planning of robots, which regards the multi transaction system as a complex robot with multiple degrees of freedom. This approach may reflect close coordination and optimal control between robots and is fully ready. However, with the increase of tasks and the complexity of the environment, the number of robots increases significantly, which increases the complexity of centralized programming algorithm, making it difficult to realize, and the reliability of the system is very low. Distributed path planning shows that multiple robots are independent individuals, independent sense organs and action organs, which can reduce the complexity of system computing through distributed computing, and ensure that they respond in real time and adapt well to the environment. However, such a distributed route planning approach may lead to the fact that too much coordination leads to inefficiency, and multi robot route planning is not the best choice. Distributed path planning is usually divided into two stages: the first stage completes the path planning of each robot, and optimizes the path in advance without touching each robot.

3.4. Q-learning Algorithm Hierarchy

Value functions only consider general returns in a particular state. The operation value function takes into account the overall return on completion of an operation in a particular state. All state spaces are considered to be composed of different state actions. Q learning algorithm uses state actions as the main unit of strategy selection, which describes the advantages and disadvantages of strategy selection in the environment more accurately. For planning work, the meaning of reward will change only when the destination or obstacle is reached and the status value is effectively updated. the scarcity of reward function leads to inefficient planning and multiple iterations, especially in a large-scale unknown environment, there may be a huge unwelcome iterative search space.

Route planning algorithm:

(1)Coordinates determine the starting point coordinate and the value of target point B. The initialization state is the objective function to set the potential pail gravitational potential of the central location. After installing V (s) initialization table according to the target environment as a priori knowledge initialization table, the initialization value after installing V (s) is greater than or equal to 0.

(2)The four directions of environment map are searched by layers. If obstacles are found, V (s (T + 1) = an operation. In lax A / B, the extrinsic value of trap region state is guaranteed to be negative.

(3)Update the status action function table and use the environment value function:

$$\min \frac{1}{N} \sum_{i=1}^{n} [-\sum_{c=1}^{c} \delta(y_i = c) g \log p] \tag{8}$$

Min is the best clustering value in FP growth algorithm; C is the number of nodes in the frequent pattern tree.

3.5. Robot Algorithm Model

In order to implement the whole algorithm for planning full coverage, it is necessary to determine the activity value of each neuron around the robot, and determine the state of the neuron according to the analysis of the activity of the upper segment neuron, especially depending on the state of the neuron. When the state of neurons is initialized, the state of neurons is determined by the ratio of barrier networks which constitute the general network of neurons. When all arrays of neurons can be accessed, the state of neurons is defined as ordinary uncovered neurons. When neurons are set up for neuron

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barrier neurons, the proportion of transmission grid in neurons is less than 2%, otherwise they are individual uncovered neurons. When neurons are covered, they update the state of neurons and the effects on neuronal activity caused by changes in neuronal state. In order to establish the target point of neurons, this paper uses the calculation of the activity of the surrounding neurons, the location search and the location recording of the most active neurons. Then, based on the neuron activity values recorded in this document, we can determine whether the robot is trapped in the dead zone and whether the neuron is the next target (if not in the dead zone). Otherwise, when the robot falls into the dead zone, it will quickly receive the next target according to the algorithm to leave the dead zone quickly, and so on, so as to determine that the area has been covered. As shown in Table 2, in the simulation of robot real-time neural network path planning algorithm, the difficulty of the algorithm is different, and the corresponding speed and efficiency are also different.

Table 2: Robot algorithm simulation

Project	Algorithm	Simulation	coefficient
Quality	800	1040	1080
competence	993	204	208
Practical innovation	193	800	800

3.6. Creation of Data Sets

In the above three environment graphs, the length of SVM path is higher than the other two algorithms, and the total number of nodes in the extended tree is also smaller than the other two algorithms. Especially in the narrow channel environment, the algorithm in this chapter greatly reduces the variable probability and the number of directional expansion nodes. The basic SVM is relatively random, and cannot plan the effective path within the specified iteration range in the environment with large obstacles: the target offset SVM shows the huge difference of path planning results in narrow channel environment.in the same planning environment, the algorithms in this chapter are almost the same, and they are basically stable.

4. Results and Discussion of Association Rule Algorithm

4.1. Statistical Results of Robot Real-Time Neural Network Path Planning Algorithm Evaluation

At present, many methods of robot path planning are implemented in static environment instead of considering practical problems. However, the path planning of robot is mainly for uncertain environment, so it is necessary to consider real-time planning. At present, the main focus of planning route research is to integrate various methods, make full use of and avoid shortcomings. The corresponding estimation algorithm data are listed in Table 3.

Table 3. Algorithm evaluation

Numbering	Speed	Ranges	Proportion
I1	Excellent	90 points or more	35.6%
I2	Good	80-90 points	35%
I3	General	60-80 points	30%
I4	Pass	60 points or less	24%

According to this paper, the advantage of the exact algorithm is that it can solve the problem accurately, but it has a key limitation. Only when the problem is not serious, this method can guarantee the expected effect. However, when the scale of the problem is relatively large, the use of precise algorithms often leads to over calculation and too much information. these problems will inevitably lead to the algorithm unable to work effectively. Therefore, the accurate algorithm is mainly suitable for small problems, clear structure, clear connection, less information, and can clearly define the best solution. However, in the practical application of VRP problem, because the actual application program is mainly large-scale planning problem, which contains more information, and the problem environment is relatively complex, it is difficult to achieve the desired effect by using accurate algorithm in practical application. Therefore, there are no strict standards for the evaluation criteria of complex and dynamic VRP model environment, large-scale planning point and even the best solution,

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but multi-objective objectives are needed in different application scenarios. With the characteristics of optimization and decision-making, people tend to choose closer algorithms to solve related problems. In the algorithm, the speed is gradually improved from 24% to the highest 35.6%. The evaluation statistical results are shown in Figure 2.

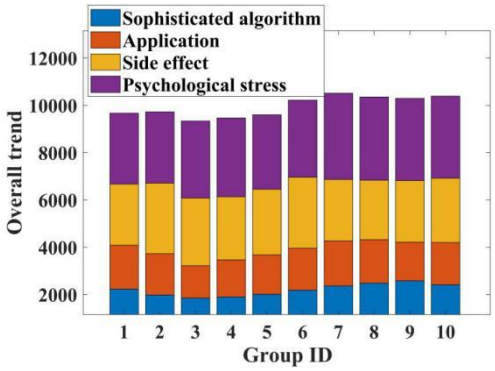

Figure 2: Algorithm development trend

As can be seen from the data in Figure 2, the trend of robot real-time neural network path planning algorithm has increased by more than 20%.

It is found that the existing heuristic algorithm and the improved heuristic algorithm optimize the result of the solution, and continue to move towards better results to ensure that the solution of each step of the algorithm is the current optimal solution. Research shows that the best solution usually obtained in the end is not necessarily the best solution for each search phase. Therefore, this algorithm is easy to enter the local search, and does not need to jump out of the local range to find the global highest point. Sub heuristic algorithm is proposed to solve the defects of the above algorithms. The sub heuristic algorithm starts from a specific starting point and searches in the field. The relevant data is shown in Figure 3. From the data in Figure 3, it can be seen that the algorithm can improve the robot path planning speed by up to 35%.

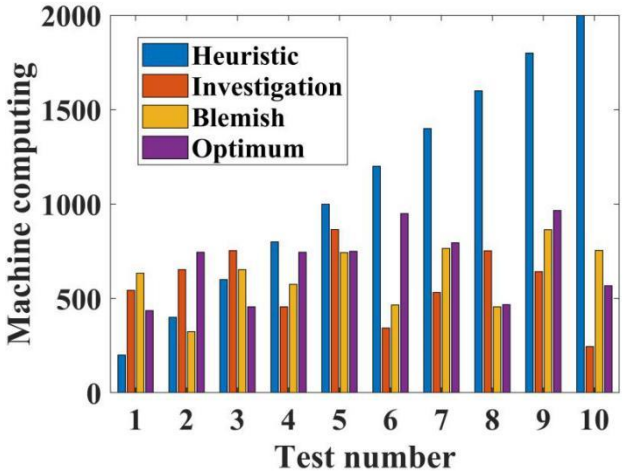

Figure 3: Algorithm speed test

4.2. Discussion on Application of Robot Neural Path Algorithm Evaluation System

In this chapter, we first introduce the test computer configuration, test program environment and parameters, and then analyze the environment test. In each scenario, 100 pairs of random test points are randomly generated and tested using three routing algorithms. The test results show that filtering vertex can effectively remove overflow vertex, and the R improvement effect is 28.55% in four environments. In addition, the reverse optimization algorithm successfully draws all checkpoints for the fourth chapter of routing and result analysis testing. In the four environments, the maximum planned step is 28 steps, and the time consumption is only half of the traditional algorithm. Then, the path planning results in each environment are analyzed, which further proves that the algorithm of optimizing vertex counter can solve the problem locally. The results show that the inverse proportion algorithm can further

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eliminate redundant paths and achieve the best planning effect. Experiments show that the improved algorithm solves the local optimization problem of fraud algorithm, reduces the time complexity of path planning algorithm, and reduces the steps and time of path operation. Finally, the design effect of fraud's improved algorithm is compared with that of daystar algorithm. The results show that fraud's improved algorithm is better than daystar's in all aspects. The relevant data is shown in Figure 4. As can be seen from the data in Figure 4, the speed of the algorithm after mining is increased by 30%.

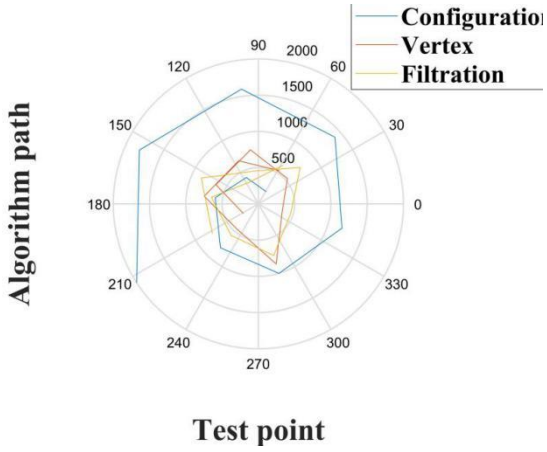

Figure 4: Robot real-time neural network path planning algorithm path

The task of path planning with multiple robots is a multi-task optimization. The routing planning requirements of multiple real-time robots can be solved by an optimization algorithm based on single objective optimization. This algorithm usually transforms multiple path efficiency indicators into a target, and then solves it. Compared with the multi-objective optimization algorithm based on multi-objective optimization theory, it has advantages in speed. Common conversion methods include limitations and weight factors. Changing the method and applying the unified objective optimization algorithm to the task of planning path, but these tasks have no different requirements on the number of path results. According to these considerations, this paper proposes an artificial bee family algorithm based on weight vector to solve these path problems. The relevant data is shown in Figure 5.

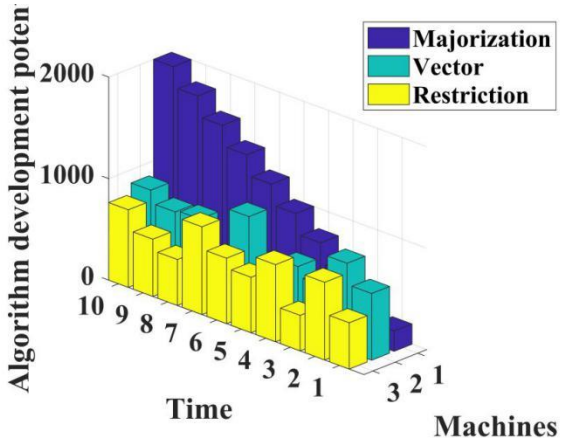

Figure 5: Algorithm potential information

It can be seen from Figure 5 that the robot neural network path planning algorithm can improve its algorithm speed to 35% at the maximum potential.

5. Conclusions

(1) In order to further improve the experimental system of multiple robots and improve the control accuracy of robots according to the algorithm implemented in this paper, the multi robot path planning method is compared with other methods to test the advantages of the method, rather than the algorithm of other methods.

(2) The selected path planning algorithm is a * and artificial potential field method, mainly because

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its algorithm principle is simpler and more mature than other algorithms, so after eliminating its defects, it can basically implement path planning, but the improvement effect is targeted. For example, the path of the algorithm a * plan still has great heterogeneity, and other mathematical methods can be considered for smooth optimization. In addition, it is necessary to find a more effective algorithm model, such as neural network algorithm and genetic algorithm in the current intelligent algorithm, for the complex real environment which cannot meet the actual path planning requirements.

(3) The research results show that the algorithm speed of robot on real-time network path is 24% higher than that of normal network path algorithm, and can be increased to 30% after deep mining, and the efficiency of machine algorithm can be increased to 35% under more complete algorithm. Therefore, the robot real-time neural network path planning algorithm can complete the task more efficiently.

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