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Abstract

From perspectives, and they can be classified into three categories according to different viewpoints: "platform theory", that is, the entrepreneurial environment is regarded as the government and society for entrepreneurs to create new public platform built by enterprises; "factor theory", that is, the entrepreneurial environment is understood as a combination of various factors affecting entrepreneurial behavior; "system theory", that is, the entrepreneurial environment is regarded as a complex integrated into various entrepreneurial environment elements. The system believes that the entrepreneurial environment refers to the situation around the entrepreneur, which is of course, because the connotation and extension of the entrepreneurial environment are very rich, it is difficult to accurately define its concept. Drawing on the viewpoints of "factor theory" and "system theory", the author believes the development of college students and their innovative careers. With the advent of the Internet era, more and more college students use the Internet to start businesses. If college students want to realize their own value through entrepreneurship, they need to choose their own development path. The optimization of it, namely, the optimization of entrepreneurial opportunities, the optimization of entrepreneurial resources, and the optimization of entrepreneurial teams. In order proposes two improvement strategies based on the analysis of the individual movement of the gray wolf when the algorithm is optimized. The second is to improve the control parameter adjustment strategy, and use the power function instead of the linear function. This paper analyzes choice by optimizing the entrepreneurial path to further improve the entrepreneurial one, it provides a favorable environment.

Key words: College students' entrepreneurship; multi-objective gray wolf algorithm; optimization path

Introduction

Entrepreneurship, from a global perspective, has become a global proposition and is increasingly favored and recognized by countries around the world [1]. Because under the background of today's increasing development of information technology, entrepreneurial activities can not only promote technological innovation, accelerate the upgrading of industrial structure, and improve labor productivity, but also do it, promote labor employment, and stimulate the creative potential of social members [2]. Therefore, entrepreneurship for an unparalleled economic prosperity [3].

As my country's economic development and the employment situation of college graduates is becoming the focus of the whole society [4]. In June 2015, a "2015" was about 92.1% [5]. It is also reported that in 2016, there will be more than 7.65 million college graduates nationwide, which is a new high on the basis of 7.49 million graduates in 2015[6]. Coupled with the unemployed graduates in 2015, the employment situation of college graduates this
year will be even higher [7]. For severe. To broaden their employment channels, the report of the 18th National Congress of the Communist Party of "Decision on Several Major Issues" put forward: "Implement the policy of encouraging"

In March 2015, the "two sessions" were held, and "mass entrepreneurship and innovation" [8]. Subsequently, the Party Central Committee and local governments at all levels [9]. More and more college students are beginning to consider starting a business, and colleges and universities have also taken measures to encourage [10]. For example, on May 1, proposed to adhere to the strategy of expanding employment development, coordinate the promotion of employment of key groups such as college graduates, and strengthen employment and entrepreneurship services and vocational training [11]. On May 13, the called for strengthening the construction of teachers' innovation and entrepreneurship education and teaching capacity, improving student entrepreneurship guidance services, and improving innovation and entrepreneurship funding support and policy guarantee systems [12]. They have been elevated to a national strategic position [13].

The Implementing the Entrepreneurship Leadership Plan for College Students" From popularizing entrepreneurship education, providing convenience for industrial and commercial registration and bank account opening, providing multi-channel financial support, providing support for entrepreneurial business sites, and strengthening entrepreneurship In terms of public services and other aspects, specific measures to promote college students' entrepreneurship are put forward [15]. The positive attitude towards college students' entrepreneurship from the government level and the society as a whole, coupled with the further development of the Internet and mobile Internet, especially the development of the Internet has entered the "Internet +" era, the market has huge room for development, and the overall entrepreneurial boom in the society has an impact. In 2015, the entrepreneurial boom began to rise [16]. Entrepreneurs, especially college students, have ushered in unprecedented opportunities [17]. Starting a business or joining a start-up company will be the one [18].

Any entrepreneurial activities of college students are carried out in a certain social environment, and the entrepreneurial culture environment and it is also an important factor affecting college students' entrepreneurial activities [19]. The analysis of college students' entrepreneurial environment and its optimization path from the perspective of campus culture has strong practical significance for improving college students' entrepreneurial education in my country [20].

Materials and Methods

(1) The connotation of college students' entrepreneurial cultural environment

Entrepreneurial culture environment is a sub-environment. In recent years, the research results of domestic scholars rarely involve this field. Based on the research results on entrepreneurial environment and entrepreneurial culture at home and abroad, the author believes attitudes of families, universities and society towards college students' entrepreneurial behavior and value, as well as the elements that form an entrepreneurial cultural atmosphere. organic whole [21]. This paper mainly studies the entrepreneurial culture environment of college students from the perspective of campus culture, that is, a university's attitude towards college students' entrepreneurial behavior and value in the process of long-term implementation of entrepreneurship education. It is an organic whole formed by various elements of the entrepreneurial cultural atmosphere of "advocating entrepreneurship, encouraging entrepreneurship, and tolerant of failure". As Gui Yonghao, vice president of Fudan University, said, "The entrepreneurial culture of a university should provide students with a possibility of thinking about starting a business. It is difficult to say that a competition,
a class, or a lecture can build the entrepreneurial atmosphere of the university, which should be a whole"[22].

(2) Entrepreneurial optimization path in the era of "Internet +"

The conditions for the success of college students' entrepreneurship include many factors, such as the quality of entrepreneurs, entrepreneurial opportunities, entrepreneurial resources and so on. Optimizing the entrepreneurial path is a specific step for college students to achieve successful entrepreneurship. It is the entire process of the formation of entrepreneurial motivation, the search of entrepreneurial opportunities, the utilization of entrepreneurial resources, and the formation of entrepreneurial teams. In order entrepreneurial path can be optimized [23].

(1) Optimizing the quality of entrepreneurs

Entrepreneurship is not a simple matter. If the entrepreneur does not have certain quality and ability, it will easily lead to failure. Entrepreneurial qualities include the ability to smell the market, the ability to withstand pressure after setbacks, relevant legal knowledge, and the ability to communicate and lead. These are all conditions that entrepreneurs need to have. The school can set up professional entrepreneurship classes according to the entrepreneurial needs of college students, and provide training for the problems encountered by college students in entrepreneurship [24].

(2) Optimization of entrepreneurial opportunities

Through machine learning algorithm, many college students will fail after they have the qualities of entrepreneurs, a large part of the reason is due to the lack of entrepreneurial opportunities, which can also be said to be the lack of feasible entrepreneurial projects. In this regard, schools can provide students with certain infrastructure and equipment according to their own conditions, and build university entrepreneurial parks. Strengthen the exchange experience of college students and entrepreneurs. The government can also give some support, increase preferential tax According to the needs of the market, provide more high-quality entrepreneurial opportunities for college students and create a good entrepreneurial environment [25].

(3) Optimization of entrepreneurial resources

College students embark on the road of entrepreneurship because of their own conditions and social needs. For departments can strengthen education and publicity to help college students familiarize themselves with the entrepreneurial situation. Secondly, with a good entrepreneurial environment, it can guide the society or enterprises to pay attention to college students' entrepreneurship, enhance the confidence of college students, and attract more college students' entrepreneurs. Finally, relevant psychological courses are offered through educational institutions or government departments. Entrepreneurship is not a simple matter, entrepreneurs need to have a strong psychological capacity and innovative consciousness. When college students enter the workplace for the first time, experience funds are relatively weak, and the government can establish a college student entrepreneurial fund to finance them. To solve some of the worries for college students, establish a sound support system.

(3) The entrepreneurial model of college students

Entrepreneurial model refers to a paradigm in which entrepreneurs rationally match various entrepreneurial elements in order to realize their own entrepreneurial ideals and rights through the rational allocation of entrepreneurial elements. In essence, such integration of entrepreneurial elements such as their entrepreneurial organization form, entrepreneurial method, and entrepreneurial industry. In the era of "Internet +", according to the primary
development of the Internet itself and its secondary or tertiary development and application as a technology carrier, combined with the theory of entrepreneurial innovation and "Internet +", a new division and definition of the entrepreneurial model of college students is carried out. The entrepreneurial model of the company is mainly divided into three types: the entrepreneurial model itself, the entrepreneurial "Internet +" and the entrepreneurial model based on the Internet of Things. No matter what the entrepreneurial modes of college students are classified according to, each mode has its own ones.

The entrepreneurial model based on the Internet itself refers to an entrepreneurial model that uses the technology and information provided by the Internet as a platform to exchange information on products and services, conduct barter transactions through the time difference of information, and finally realize value-added entrepreneurial models. There are four types of customer-to-customer to customer-to-customer, and primary Internet services. This entrepreneurial model is equivalent to being an online subcontractor or agent for some large platform websites. Because of the low threshold, it is easier for college students to enter.

(1) Primary Internet Service, referred to as PIS (Primary Internet Service) mode. It is mainly profited by engaging in online services, specifically, providing services to other Internet entrepreneurs. With the growing business of some Internet entrepreneurs, the work that must be done, such as photographing items, product descriptions, and advertising production, has become more and more complicated. Outsource the tedious work, from which junior Internet service entrepreneurs can earn commissions for providing such services.

(2) Customer-to-customer, referred to as C2C (Consumer to Consumer) model. This is a consumer-to-consumer Internet entrepreneurial model, which is essentially an online auction. It is a free trade between civilians. Transactions are completed online to facilitate the circulation of goods between individuals. This transaction model is very popular with college students and entrepreneurs. Most college students nowadays like to pursue fashion. Their fashionable clothes, accessories, daily necessities, computers, mobile phones, etc. want to be updated after only a few uses, but they have no financial strength. Through this C2C model, we can barter and barter with consumers in need. College students are not only the providers of Internet entrepreneurship sources, but also the consumer groups. Through such transactions, they can earn the difference in information and gain profits.

(3) Thematic customer-to-customer, referred to as C2B2C (Consumer to Business to Consumer) model. This is a typical intermediary Internet entrepreneurial model, which is to wholesale commodities on B2B websites and sell them in their own internet stores. In fact, they only need to copy the pictures and texts of the commodities from the wholesaler's website to their own website. That is, without touching the actual goods, you can even send the shopping order placed by the user directly to the wholesaler, and then the wholesaler will deliver the goods to the user. Some entrepreneurs buy goods directly on Alibaba's website, sell on Taobao's online store, and even use the supplier's logistics and distribution system to serve themselves.

(4) Business to Customer, referred to as B2C (Business to Customer) model. This is based on the Internet as the main means, through the Internet website by the merchants or enterprises to meet the different preferences of different consumers on the style, packaging, shape, function and other aspects of online products and the differentiation factors of personal income, and constantly introduce high and medium, An Internet entrepreneurial model of low-grade products. This model is the main transaction model for college students' Internet entrepreneurship. For example, online games, video games in which multiple players are interactively entertained through computer networks, including strategy game.
**Results and Discussion**

(1) External population Archive mechanism

Such external population of three situations will occur:
1) The new individual of the Archive;
2) for individual individual will be added to the Archive, and the individuals dominated by it will be deleted;
3) If the new individual and any individual in the Archive do not dominate each other, the individual will be added to the Archive. In order Calculate the objective functions of all individuals (f1(x), f2(x),..., fj(x),...,fm(x)), ; For each objective function fj(x), with fjmax and fjmin and they are inserted into the non-existent groups. In crowded groups, increase the diversity close to the optimal frontier.

(2) The alpha wolf selection mechanism

Archive, and the alpha wolf (including α wolf, β wolf and δ wolf) is selected from the Archive by means of roulette as shown in formula (1):

\[
P_j = \left( \frac{1}{N_j} \right)^c \quad (1)
\]

Among them, C is a constant greater than 1, which is set according to actual needs; Nj is the total number of individuals in the group where the individual belongs.

Considering (marked as α, β, δ wolves respectively, and the rest of the individuals are marked as ω wolves), and during the hunting process, the wolves approach the food position (global optimal solution) under the guidance of α, β, δ wolves, and the guidance equation is as follows:

\[
D_p = C \cdot X_p(t) - X(t) \quad (2)
\]

\[
X(t+1) = \frac{1}{3} \sum_{p=\alpha, \beta, \delta} \left( X_p(t) - A \cdot D_p \right) \quad (3)
\]

where X represents the position of the gray wolf, follows:

\[
A = 2 \cdot a \cdot r_1 - a \quad (4)
\]

\[
C = 2 \cdot r_2 \quad (5)
\]
a is a control parameter, whose value is in the range of [0,2] and decreases linearly with the increase of algorithm iterations.

(3) Fusion adaptive differential evolution mechanism

When the individual is updated to the alpha wolf, the original individual wolf is retained when the original individual wolf is updated to the alpha wolf. The strategy is to use the individual differences between the head wolves to perform a there is no difference. Each head The wolf can update three positions for individual wolf to choose and The details are as follows:

\[
X_{\alpha j}(t+1) = u \cdot (X_\alpha(t) - A \cdot D_\alpha) + k \cdot \left( X_j(t) \right) \quad (6)
\]

\[
X_{\beta j}(t+1) = u \cdot (X_\beta(t) - A \cdot D_\beta) + k \cdot \left( X_j(t) \right) \quad (7)
\]

\[
X_{\delta j}(t+1) = u \cdot (X_\delta(t) - A \cdot D_\delta) + k \cdot \left( X_j(t) \right) \quad (8)
\]
Among them, \( u \) and \( k \) are the difference parameters. The specificity of the alpha wolf is preserved. When the solution near the alpha wolf is better, the individual wolf will approach the alpha wolf as much as possible to find the optimal solution, instead of being in a position between the three wolves without any direction and losing the optimal solution; At the same time, the difference of the other two alpha wolves is introduced as the disturbance quantity to prevent the individual wolves from getting too close to the current alpha wolf when moving, causing the wolves to gather and lose diversity.

The one retains the maximum dominance characteristic of each alpha wolf, with a value:

\[
S_{j2} + S_{j3} - S_{j4} = k_0 + (q_1 - q_2) \cdot \frac{2}{S_{j2} + S_{j3} - S_{j4}}
\]

Among them, \( S_{jm} \) of the base value of \( k \).

Equation (10) dynamically adjusts the value of the difference between the four individuals currently generated is small, the larger the value of \( k \) is, the difference disturbance will be increased next time, and the global search for more solutions will be strengthened; otherwise, if the When the difference is large, the differential disturbance is reduced, and local precision development is carried out.

\((4)\) Grey wolf optimization algorithm

The gray one imitates the predation process of a wolf group with a strict hierarchy in nature, led by the alpha wolf, and other individual wolves keep approaching the alpha wolf. In the gray wolf optimization algorithm, the current three optimal solutions are denoted as alpha wolf, Beta wolves and delta wolves, other individuals round up their prey through the guidance of the three head wolves, and the round-up process is as follows:

\[
D_{a, \beta, \delta} = | C \cdot X_\beta(t) - X_j(t) | (11)
\]

\[
A = 2ar_2 - a (12)
\]

Among them, head wolf is calculated by formula (11), and the prey is rounded up by formula (12), where \( r_1 \) and \( r_2 \) are the swing factors. It can be seen from the above formula that the algorithm has a large value of \( A \) in the early stage of iteration, so the global Detection, the later \( A \) value is reduced to complete the local fine development.

Firstly, some unique concepts in multi-objective optimization problems are briefly introduced. In multi one used to judge the pros and cons of the solution. The definition of the Pareto dominance relation is as follows.

Definition 1 For any two solution vectors \( x \) and \( y \), suppose that in the minimization problem \( f(f_1, f_2, \ldots, f_k) \), the solution \( x \) is said to form Pareto dominance over the solution \( y \) if and only if:

\[
f_i = x_i + \frac{2}{|J_1|} \sum_{j \in J_1} h(y_j) (13)
\]

\[
y_j = x_j - \sin \left( 6\pi x_i + \frac{j\pi}{n} \right) (14)
\]

For simplicity, it can also be called means that solution \( x \) is better than solution \( y \). It can be seen from the above definition that the essence of solving a any other feasible solution (for
the convenience of description, such solutions are collectively referred to as called the Pareto boundary of the multi-objective optimization problem, which is specifically defined as follows. Definition 2 Suppose then its Pareto boundary is:

\[ P_f = \{ x \in X \mid \exists x_i \in X, x_i > x \} \] (15)

The boundary of the optimization problem.

Experimental results and analysis

(1) Feasibility Analysis

Combined with the observation of the optimization process and the principle of the MOGWO algorithm, the reasons why MOGWO stability are analyzed. There are the following points:

The exploratory is insufficient. Analyzing process, it is found that, compared with GWO, MOGWO only improves the exploration ability of the algorithm in the strategy of selecting the alpha wolf from the Archive; it is also found in the simulation that whether it is successful optimization (as shown in Figure 1) or falling into a local optimum, The development speed of the algorithm is significantly higher than the exploration speed. And as shown in the figure, once the Archive population completely falls into the local optimum, the speed of the algorithm jumping out of the local optimum will be extremely slow.

![Figure 1.](image)

Intelligent individual movement (when the optimization is successful)

The convergence speed is fast, but it does not bring about the benefits of optimization efficiency. In terms of the number of iterations, as shown in Figure 1, the Archive population is very close to the Pareto boundary at the fifth iteration of the algorithm, but it takes 15 iterations to find the entire Pareto boundary; in terms of running time, the Archive population tends to Prematurely flooded with a large number of similar solutions, the algorithm needs to select and delete many individuals from the Archive at each iteration, which takes a lot of time.

It has been pointed out in the previous analysis that the exploration ability of the original algorithm needs to be improved; for the control parameter a, the larger the value of a, the stronger the exploration ability of the algorithm, so the improved f(x) on [0,1] should be concave function. Examine commonly used nonlinear functions such as characteristics of these functions.
It is observed that they meet the requirements. Considering that the early stage of the algorithm requires high exploration ability, a power function in the form of \( f(x) = x^k \) is used to adjust the control parameter \( a \), where \( k \) is a constant greater than 0. In order to determine the appropriate \( k \) value, the three test functions (ZDT1~3)[15] of the ZDT series were tested repeatedly with different \( k \) values to examine the stability of the algorithm.

(2) Simulation experiment

Such algorithm and MOGWO are both swarm intelligence optimization algorithms, and have good optimization ability. The specific experimental settings are as follows. For each test function and the GD and IGD values of the simulation results are shown in Figure 3.
In order to more intuitively reflect the pros and cons of the optimization results, this paper presents a box plot of the IGD values of the optimization results of the three algorithms (Figure 4). It will have the optimal optimization results of each test function from the optimization results of the three algorithms for the UF series functions, and gives the difference between it and the theoretical Pareto boundary of the test function. Comparison chart (Figure 5).
Assisted optimization results of UF series functions

Figure 5 lists the optimal results of the algorithm in multiple experiments. In the UF2 function, the results of the improved algorithm are significantly better than the other two algorithms; in the UF4 function, the performance of the three is not much different. The IGD value shows that the GD and IGD values of the improved algorithm are slightly better than the other two algorithms; in the UF8 function, the accuracy of some optimization results of MOPSO is not enough, and by comparing the GD and IGD values, under the premise that both have good accuracy, the diversity of results.

In summary, AS-MOGWO effectively improves the original algorithm (MOGWO). such optimization results of AS-MOGWO have stronger reliability.

(3) Empirical research results and analysis

Figure 6 shows the statistics of obstacles faced by college students generally believe that inexperience, too much risk, and insufficient funds are the biggest obstacles to entrepreneurship, accounting for 80.9%, 72.5%, and 72.5%, respectively. The reason why they are the main obstacles faced by college students in entrepreneurship is that they cannot be overcome by college students alone, and the joint efforts of the government, universities, and university science parks are needed to increase support to provide help for college students to start their own businesses. Secondly, difficulty in marketing (55.7%), lack of team (53.4%) and entrepreneurial guidance (51.2%) are also obstacles faced by many college students in the process of preparing for entrepreneurship or implementing entrepreneurial plans. In addition, a small number of college students believe that the obstacles to college students' entrepreneurship come from family obstacles (23.7%), lack of technical support (27.3%), lack of suitable industries (35%), and difficulty in recruiting personnel (16.8%). Relatively few, but it reflects that the ability of college students is also very important in the development of entrepreneurship. Therefore, college their own entrepreneurial ability and entrepreneurial quality in their usual study and life, in order to seize entrepreneurial opportunities in the fierce market competition.
Assisted obstacles faced by college students in their entrepreneurial choices

It is extremely unstable in repeated experiments, and its optimization results generally optimum; and MOPSO In repeated experiments, the GD value is high, indicating that the results with large errors often appear in the solution set; in contrast, the improved algorithm has good stability under both simple test functions and complex test functions, performed well in repeated experiments with few poor results.

Conclusion

Such inevitable result and portrayal of the continuous development of the economy and society. We conduct ideas that conform to the characteristics of the times. At the same time, through the optimization of the entrepreneurial path, it can point out the future development and direction for college students, which is beneficial to enhance the entrepreneurial interest.
of it in my country. The multi-objective gray wolf algorithm has fast convergence speed and simple operation, but it is easy to fall into local optimum in the later stage, resulting in slow running speed and insufficient stability. Based on these characteristics, it is with observation strategy. The "observation" phase of the wolf group is added to adjustment strategy of the control parameter a is improved.

**Data availability**

The figures used to support the findings of this study are included in the article.

**Conflicts of interest**

The authors declare that they have no conflicts of interest.

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