

*Original Research Article*

# Design and application of intelligent teaching system based on artificial intelligence technology

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**Abstract:** In order to further improve the overall efficiency of teaching in universities and colleges in China, we specially developed the intelligent teaching control system. This paper makes a comprehensive analysis of the genetic algorithm in artificial intelligence technology, and analyzes the system design criteria, system application and database. It is of great significance to promote the teaching tasks of teachers and related staff.

**Keywords:** Artificial intelligence technology; intelligent teaching system; design

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With the rapid development of the society, the information construction of colleges and universities has also been widely concerned by the community, intelligent office has also been fully applied and carried out in many colleges and universities. The management and control staff of colleges and universities comprehensively improve the office efficiency by using the advanced information system. However, for some special work, such as the course arrangement still should be done by manual, so the work efficiency of this link has not been fully improved. After the full application of artificial intelligence calculation, the close combination of artificial intelligence and teaching system has also become the core of the current education industry.

## 1. Overview of genetic algorithms

### 1.1 Core principle of the algorithm is introduced

In the natural order of existence, all creatures need to compete for survival. In the 1970s, according to the production rules in nature, professor Holland from the United States has fully applied information technology to improve intelligent analytical problems and proposed the irregular exploration algorithm. It is also an algorithm widely used in the computer industry at the present stage. Meanwhile, it has been deeply developed in many fields and has been well proved to be a very effective method.

The basic principle of genetic algorithms is based on the integration of unsolved problems further demonstrated as "groups". Before starting the process of operation, it needs to be part of the "group" hypothesis to solve base and set the early stage of the solution of the equation. The initial recognition of the equations is the combination of the overall resettlement in the related problems of system by means of the mutual competition rule of conduct with the help of fusion to constantly produce new groups. Until the final formation of the group can it effectively meet the expected target value, so that the related problems are resolved for the best.

### 1.2 Whole operation flow of the algorithm is introduced

The whole process of genetic algorithm is usually carried out from the initial stage. As a matter of fact, a set is

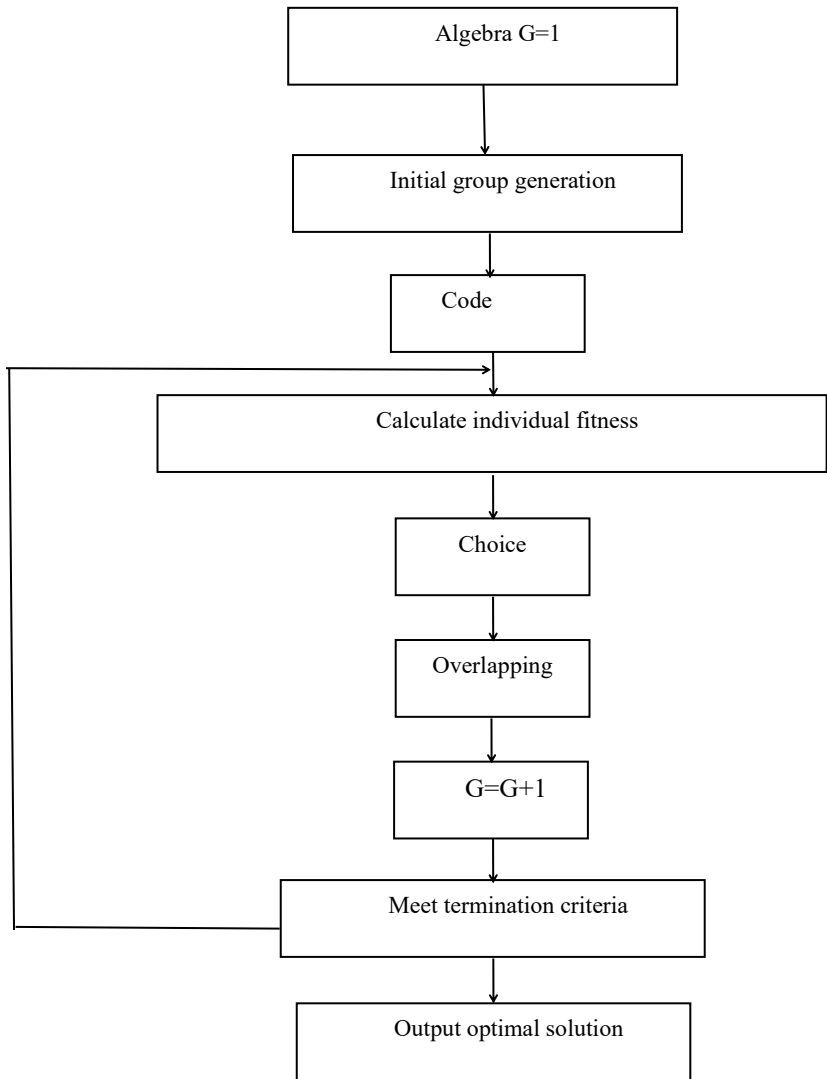
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found from the whole group as the initial population. In the process of carrying out algorithm operation, the overall size of the population is also changing constantly. Individuals refer specifically to the elements of all traits in a population. Fitness is the degree to which each individual adapts to the external environment as a whole. In order to carry out a better measurement of the individual, quantitative functions for fitness are also called fitness functions according to which development criteria in nature are displayed. Coding is the operation method that cannot process and control the parameters of the problem space in the fastest way, so it needs to be converted into a space set that can be fully understood by PC according to certain criteria. The development process of its overall operation method is shown in **Figure 1** below.



**Figure 1.** Steps of genetic algorithm

Among them, selection and coincidence are used as genetic operators in the operation methods. Selection is the effective preservation of the individuals with relatively high adaptability in the group and the removal of some individuals with relatively weak adaptability; In the case of coincidence, different individuals are replaced according to relevant operating rules for the partial structure of the individuals, so as to obtain a new individual.

## 2. Introduction to system design

### 2.1 Basic guidelines for design development

The teaching system as a whole should not only fully meet the specific requirements of university teaching, but also accord with the development of the times. The overall teaching can adapt to the improvement of the comprehensive

teaching level of the school and better self-adjustment and innovation. In particular, the following aspects need to be fully satisfied: first, it can be further expanded. School is a key place to cultivate talents. With the overall improvement of national economic and educational development at the present stage, the social demand for talents has also been raised to a higher level. Therefore, the school should be accompanied by the development of society and further reform of the teaching system. In particular, the functional areas should be further improved to better meet the development needs of the times; Secondly, we should enhance the application security of the teaching system. Because students' files are very confidential to individuals, especially important test scores are recorded in student files, which puts forward a higher standard for the data storage and transmission security of the teaching system; Thirdly, it deeply combines the customization of school teaching activities. For different types of schools, their overall teaching content and activity development needs are also different, so the development of the whole system needs to be fully combined with the needs of schools for customized development. At the same time we also need to further strengthen the excellent teaching system development experience so that the development of the whole system has better efficiency, making it easy for related school staff to further apply the intelligent teaching system, which can play its role on the greatest degree and provide plenty of convenience for the school.

## 2.2 System function

In terms of the overall teaching system, teaching materials, curriculum arrangement and grade evaluation form a relatively perfect teaching control process. Therefore, for the teaching control system, the core of the teaching process for several core links to expand. The core of the intelligent teaching system includes the following modules, as shown in Figure 2.

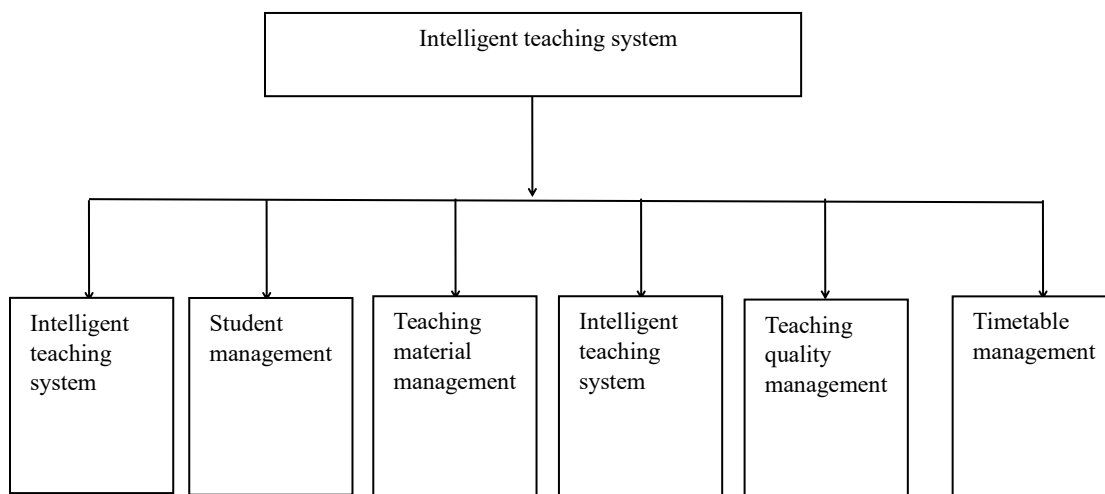


Figure 2. System functional architecture

## 3. Introduction of system application

### 3.1 Course arrangement control

Curriculum management and control are the core issue of teaching in many schools. Schools need to combine lecturers, teachers, editors, courses, time and other resources to achieve good allocation. The course arrangement is to explore the optimal combination problem based on the relative control of the whole resources. The intelligent teaching system based on artificial intelligence technology can improve this problem.

### 3.2 Control of teachers

For section of teachers, it is not only to carry out in-depth protection for teachers' basic information, but also to achieve detailed registration for teachers' basic information. Based on the overall scientific statistics of the work volume of teachers in the whole school, the proportion of teachers at different levels in the school is analyzed while the number

of teachers at different working ages is counted. The teacher control module can assist relevant teaching control departments to carry out in-depth analysis of teachers' materials, which can provide good information reference for the school to carry out teaching and professional title evaluation.

## 4. Conclusion

This paper makes full use of the artificial intelligence teaching system to carry out the overall design and exploration of the school's teaching activities. Nowadays, the functions of the intelligent teaching system can greatly meet the teaching requirements of different types of schools and achieve excellent results.

## References

1. Huang TC, Lou JA, Lang B, Li N. Design and realization of open experimental teaching information platform [J]. *Techniques of Automation and Applications* 2018; (12).
2. Ke M. Design and implementation of test system based on artificial intelligence [J]. *Electronic Design Engineering* 2018; (24).
3. Wei S. Realization of intelligent distance multimedia physical education teaching system [J]. *Microcomputer Applications* 2018; (12).
4. Wang JT. Key feature estimation method of intelligent big data in large teaching system [J]. *Modern Electronics Technique* 2018; (12).
5. Li XP, Zhang L, Zhang SG, Chen JZ, Xu MH. Research on the construction of intelligent virtual reality/augmented reality teaching system [J]. *China Educational Technology* 2018; (01).
6. Li YH, Fan TK. Design of remote intelligent teaching system model based on Agent [J]. *Electronic Design Engineering* 2017; (02).
7. Ren GJ, Bai YN. Research on specific data mining methods in multimedia intelligent teaching system [J]. *Electronic Design Engineering* 2016; (11).
8. Liu L, Li ZZ. Teaching building intelligent energy saving control system design [J]. *Journal of Electronic Measurement and Instrumentation* 2015; (12).