

A New Personalized Electronic Classroom Model

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Abstract: Traditional classroom's structure is simple and single, so propose TCCS (Teacher-Control-Content-Student) structure model for personalized Electronic classroom system. This electronic classroom is able to cater for students at different levels to distinguish between teachings, the teachers realized the "multi-places and multi-work at once". We called this technology "FenShen Technology". This model is meet the personalized needs of education and improve teaching quality.

Keywords: TCCS structure model; FenShen Agent; agent technology

1 Introduction

Apply computer-controlled technology to teaching is mainly reflected in two aspects. One is based on B / S model of distance education, and the other is based on the C / S mode of the electronic classroom. Distance education system to teaching the content stored on the Web servers, through the Internet browser, students learn to read; electronic classroom for teaching the main function is demonstration. However, traditional electronic classroom can not teaching in difference, need to seek a new solution.

TCCS (Teacher-Control-Content-Student) c electronic classroom for students at different levels to distinguish between teachings, the teachers realized the "multi-places and multi-work at once" technology on logic. We called this technology "FenShen Technology". It compared to traditional electronic classroom with the following characteristics.

- 1) It can teaching in differences aim at different students;
- 2) It can carry out a review of each student and test knowledge point online in time;
- 3) It can answer the question of different students at the same time.

The technologies used in this new type of electronic classroom system include: dual-library collaboration, data mining, real-time information retrieval, multi-vector support, Agent technology. It is precisely because of the successful application of these technologies to ensure the proper and orderly implementation of the system to complete the " multi-places and multi-work at once agent" of the teaching mode.

2 design of personalized Electronic classroom system

Traditional classroom's structure is simple and single, so it is impossible to assume a teaching task which is complex. In order to solve the problems, we have to look for a new structure for the classroom. This electronic classroom is able to cater for students at different levels to distinguish between teachings and also able to give real-time answers to student problems and so on.

2.1 creation of TCCS structure model

Based on traditional teacher/ student (T / S) model, we added a control server and a content server. Control server is responsible for processing messages have been expressed by teachers, then according to the environmental vector and interest vector, we reasoning out which form of knowledge representation is best for the student. Content server storing the databases, knowledge base, QA, the environment vector, and interest vector of each student. We called it TCCS (Teacher-Control-Content-Student) model structure.

With this model structure, teachers are send message to student after content server pre-processing the message, not directly sent to student like before (teacher can choose to communication directly with the students also). System feedback students situate to teachers in real-time. At the same time, students ask questions, answer questions, upload homework and so on. All of processes are controllability. Figure 1 show TCCS structure model.

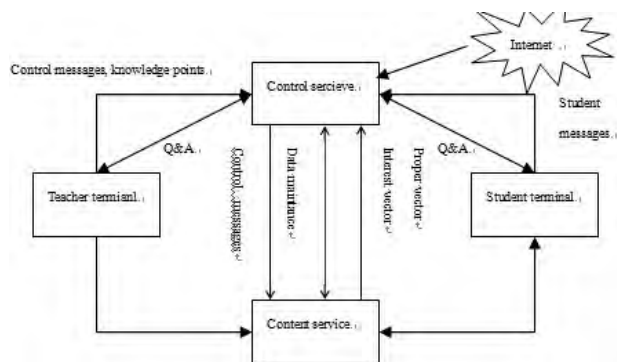


Figure 1. TCCS(Teacher-Control-Content-Student) structure model

2.2 The advantages of TCCS structure model

Figure 1 shows us that TCCS is composed of students, teacher, control server, content server. Compared with the traditional structure model, we added control server and server.

The main advantages of TCCS structure model are as follow.

1. Control server is responsible for ensuring the whole systems operate correct and orderly.
2. The content server dedicated to data storage. There is knowledge base in content server which is create and maintenance by teachers, we called expert knowledge.
3. Control server access data update Knowledge Base .The data come from Internet through Just-In-Time Information Retrieval and have been mining and processed before send to Knowledge Base.
4. Teachers machine connect with student machine through control server and content server. The two servers translate teacher's intention into a specific form before sent to students.
5. When student ask questions, control server pre-processing the question. If it can find the same question in database, it will send the answer to the student without ask teacher. If it not be able to answer, it will ask teachers to give answer. Then give the answer to the student and record it into the content server.

2.3 use three Agents to realize "FenShen" Agent

In order to reduce the burden on teachers and in-

crease flexibility of system, we create three Agent to process data from three important parts of the system.

The first Agent is Main Control Agent(MCA) for complex calculation of interest vector and some other complex calculation. The second Agent is Data Mining Agent(DMA) for data mining. The three Agent is On-line Answer Agent(OAA) for answer the question on-line.

Division the work and collaboration are exist between three Agent. For example, when MCA (Main Control Agent) found shortage of knowledge, it will notify DCA (Data Mining Agent) to explore more knowledge immediately. When OAA(On-line Answer Agent) receive question from students, it is able to know current classroom tasks and knowledge points from MCA(Main Control Agent) .

3. Final remarks

Compare with traditional electronic classroom, the e-classroom based on TCCS structure model have many advantages. It can be personalized teaching, to reduce the burden on teachers, improving teaching quality and efficiency. This model use Agent technology lead teachers become virtualization, but students will not feel they are study with virtual teacher or computer. This model is meet the personalized needs of education and improve teaching quality.

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