

Research Article

Remote Food Physical Education Based on Affective Computing Model

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Abstract: Contraposing emotion absence in modern remote food education and under this study exploringly designs and puts forward an affective Computing Model Based on Expression Recognition, affective computing is its theoretic foundation, its kernel technology estimates and comprehends learner's emotion states by catching and recognizing their motion, then presents corresponding affective encouragement and affective compensability strategies according to their given emotion states. It promotes HCI, abates the emotion absence problem in modern remote food education for some degrees and does some profitable foundational works for solving the emotion absence and realizing Harmonious HCI in modern remote food education.

Keywords: Affective computing, modern remote food education, motion recognition

INTRODUCTION

Modern remote food education is important direction of the international education development since 1980s (Zuo, 2008). It is a primary approach to realize information education and education international-ization, though modern remote food education arouses a profound revolution in educational model and educational conception (Hao, 2002), moreover, the technologies and instruments on which it relied are advanced, yet it exists some shortcoming in several aspects, such as: notion orientation, network system and alternation etc, especially in alternation aspect, the space-time separate of modern remote food education has learners could not satisfy their need in emotion communion, so emotion is absent. These absence badly influences learner's cognitive learning and mental health. Therefore, compensating emotion has most important significance for ensuring instructional quality and improving instructional effect of modern remote food education (Lou and Pan, 2003). Affective computing is a hotspot problem in information science, cognition science and psychology studies, it bases on food student being's emotion and affection, studies emotion mechanism, affective signal capturing, affective mode recognizing, emotion modeling and comprehending, emotion synthesizing and expressing, emotion transferring and alternating and so on (Picard, 1995). Its final aim is endowing computer with the affective ability similarly with food student beings (Abboud *et al.*, 2003).

MATERIALS AND METHODS

Emotional model: Emotion model will be described by Fig. 1, the producing mechanism of food student behavior mainly depends on the external stimuli and the existing real-time emotion, so considering this issue on change mechanism change of the emotion, consideration must be given to external stimuli and with feelings signal at the time. Emotional learning process mainly completed by the amygdale.

Emotional design is a kind of emotional designing concept that is developed in USA, this concept thought that the true value of products is to meet the user's emotional needs, the purpose of which is to make emotion into products through a variety of shapes, colors, mechanism and other designing elements, when consumers use the products, people can get the spirit of joy and feel satisfied and pleased, stimulate people's imagination and even produce resonance.

Professor Donald Norman thought, design can be divided into three levels: automatic pre-set layer, which can also be called as Visceral level; the level contains the control behavior of common brain activity, which also can be called as Behavioral level; the level of brain's thinking, which also can be called as Reflective level (Fig. 2).

Statistical model of hidden Markov model for emotion modeling: Due to the non-stationary random signal, the level of emotion and the emotion unobservable of foods students' sensibility signals, in

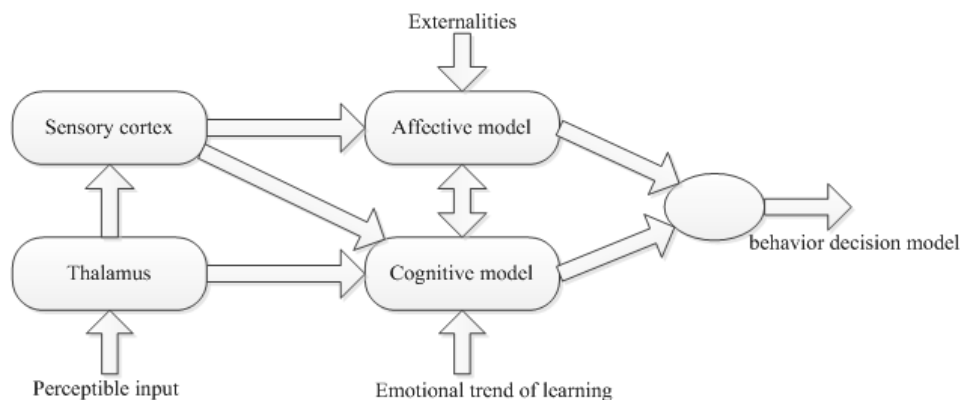


Fig. 1: Emotion model

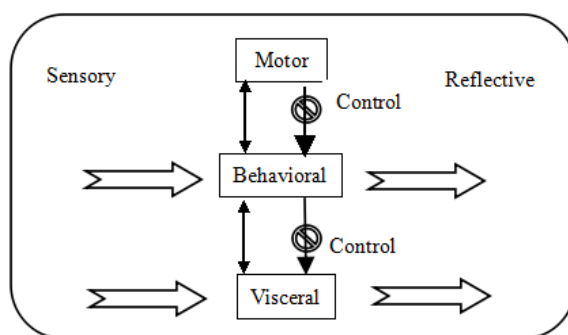


Fig. 2: Level of emotional design

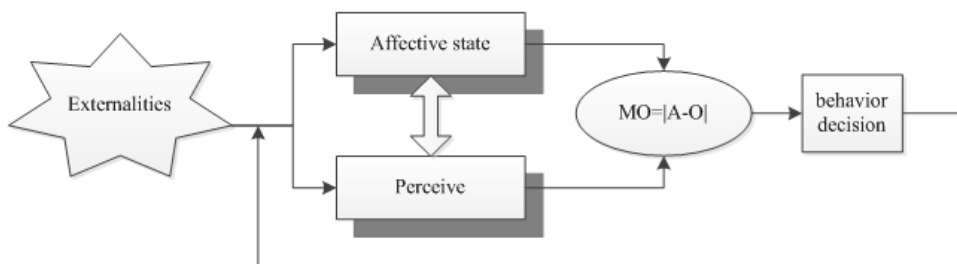


Fig. 3: Hidden Markov model

the establishment of emotion model, will use the HMM process simulation of food student psychological activity process, thus establishing the main emotion model HMM emotion. Hidden Markov model H (hidden Markov Model, referred to as HMM) is a kind of statistical signal model, which was Markov signal source or Markov chain based on probability function and proposed in twentieth Century at the end of the 60's and early 70's. It is a parametric representation, used for describe the probability model to describe the statistical properties of the random process (Fig. 3).

RESULTS AND DISCUSSION

Modern remote food physical education led to a profound change in education mode and education idea.

It adopts advanced technology and means of education, will be through the computer network extends to every corner of the society, broke the learning time, space and personnel constraints, learners can learn independently at the appropriate time and place. But based on the current PE teaching system in the concept of remote location, network system and the two-way interaction and other areas there are still shortcomings; especially in the two-way interaction, time and space of modern long-remote food physical education separation makes learners cannot meet the emotional communication and the existence of emotion absence, this will affect the students' cognitive learning, even mental health, so and emotional compensation has important significance for guaranteeing the quality of teaching of modern long-remote food physical education and improve the

Table 1: Different emotion model parameter

Stimulus signals	Emotional model parameters	Stimulus signals	Emotional model parameters
A little reward	$A_R(1), B_R(1), O_R(1)$	A little punish	$A_P(1), B_P(1), O_P(1)$
Reward	$A_R(2), B_R(2), O_R(2)$	Punish	$A_P(1), B_P(1), O_P(1)$

teaching effect of modern long-remote food physical education. In this study, with the emotional entropy as one of the constraints, to construct the initial state of emotion model of transfer matrix, provides a quantitative calculation method for virtual food student character formation. And the analysis of affective model test results show that emotional reaction model simulation is consistent with the law of food student affective behavior. Emotion model make stiff, cold machine into a "virtual food student with", to the harmonious food student-computer interaction a step forward.

In the design of the emotional model, first of all, we aimed at the most simple modeling:

Hypothesis mood divided into: general, good mood, bad in three cases, the number of state corresponding to $M = 3$ in a hidden Markov model

Expression is divided into: Expressionless, joy, no joy in three cases, corresponding the number of $N = 3$ in hidden Markov model to observe.

In the model, any state can be reached from any other state (a step), strictly speaking, properties of model is: any state can be reached from any other state in a finite number of steps. This model has the properties: each AIJ coefficient is positive, that is, for any i, j are $a_{ij} > 0$, only C), O (vIG), 0 (vIB) expressed respectively the emerging observe sequence value for the general, the good and the bad condition in the mood.

The probability of initial probability vector corresponding to the emotional model training before the start of each mood appears. According to the history external stimulation of different and specific character, can be give the corresponding initial probability vector. The mood fluctuations decay with the increase of time, unless a new incentive. Therefore most of the time people in a calm state of mind. When a virtual food student at the first time and food student interaction, because before this has not received any incentive, so at this point, it should be in a calm state of mind, with food student-computer interaction, her emotions in accordance with the characteristics of food student emotional response and gradually accumulated and change. From the above analysis, we can determine when the virtual people without incentive effect on the initial probability:

$$\text{Vector } \pi = (\pi_1, \pi_2, \pi_3) (1, 0, 0)$$

That calm state probability is 1, the probability of state of happy and unhappy state are 0. With the development of food student-computer interaction, virtual food student emotions in accordance with the

characteristics of food student emotional reaction, gradually accumulated, change. On the excitation signal of emotional awareness, we focus on stimulus. The consciousness form of the people although varied, but the food student is like every other animal, accepted the most or the "reward" and "punishment" signal. "Reward" signal refers to the signal stimulation of the brain's pleasure center: "punish" refers to the signal stimulation of the brain's unhappy. Because of this, our emotional system mainly these two sensing signal response. In the course of programming, we will signal quantization into two dimensions, namely positive stimuli consisted of "a little reward" and "reward" signal, negative stimuli consisted of "a little punishment" and "punishment" signal. Accept different signal, corresponding to different emotion model parameters (Table 1).

We are in different combinations for emotional virtual food student different stimulation, can get emotional reaction results of virtual food student. Simulation study is performed using MATLAB software. We put the subliminal stimuli, divided into four types: "a little award", "award", "a little punishment" and "punishment". Thus, for each stimulus were corresponding a state transition probability matrix and visible symbol probability matrix. For the selection of initial value used for the model reevaluation of the state transition rules matrix and visible symbol probability matrix, can be determined by experience, at the same time, want to consider the effect to external stimuli of various mentality emotion entropy, makes the role emotional entropy consistent with individual characteristics. We are located in accepting the "reward" signal, virtual food student emotion mainly emotional state transition probability moment Array.

CONCLUSION

Motion recognition means distills and analyzes motion information of food student, classifies and comprehends according to food student's cognition and thinking manners, makes computer thinking and reasoning by using transcendent knowledge about food student's emotion, then analyzes and comprehends food student's emotion, it is a research field and development direction of affective computing.

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