

Identify and Defining the Model for Emotional Intelligence of Human Learning Factor by Utilizing the AI with Machine Learning

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Abstract

You must have seen the Amazon ad on “Amazon Echo”, a device which responds to the voice and answers all possible questions which are stored in the device. This is an example of Artificial Intelligence where the machine is smart enough to identify the request and produce the response. But to do that, the machine also going to analyze the emotion of the person and based on that, it finds the search result. To find the optimal range of the human emotions We have studied the responses of 1000 faculty members, having wide teaching experience, different designations such as Asst Professor, Professor and lecturers and gender and different locations, to the several questions related to emotions required for making e-learning strategies on a five-point scale (1-strongly disagree, 2- disagree, 3- undecided, 4-agree, 5-strongly agree). Majority of the faculty members have not opted for other options except option 5 (strongly agree). Therefore, we have discussed only this option. This analysis was done by keeping in mind their role in the e-learning process of Modern AI approach.

Keywords: Human Emotion; Emotion Intelligence; AI; Machine Learning

Introduction

Learning online nowadays has been growing as a mainstream educational approach ‘maximizing access to and interactions with various knowledge sources’ (Lee, 2005) including contents and human resources using the Internet. Most of research emphasizes its potential and advantages, and of course, it has a range of new opportunities for learners and teachers.

Learners usually feel unprepared to deal with the social and communication skills required of online learning (Ng, 2011), and experience feeling of ‘impersonal and unfriendly, less emotional and more task-oriented or businesslike’ (Kreijns and Gerrissen, 2006) and various other negative emotions such as ‘ambiguity’, ‘frustration’, ‘alienation’, ‘confusion’, and ‘uneasiness’ in learning process. The effects of emotions on learning have been discussed and analysed by many researchers (Reeve, 2010; Callahan, 2005; Dirkx, 2006). Emotions play a critical role in understanding the learning and performance of human beings.

e-Learning and emotion

Experienced emotions

Rowe [1] identified various emotions experienced by learners and teachers from the beginning to the end of learning online. Kim (2006) and Astleitner (2011) also focussed on identifying ‘emotions’ experienced in the e- learning context. Kim (2010) reported various emotions including frustration, resistance, pride, relief, expectation, fear, anxiety, hopelessness, confidence, envy, and complex.

Negative and positive emotions

There are significant number of useful studies which have asserted that positive and negative emotions are the psychological bases of cognition and behaviour changes within computer based learning or web-based learning [1-7].

O’Regan (2010), reported the centrality of emotion to attention, memory and decision making, all of which are of critical importance in the learning process. The effect of these emotions was widely variable, either more negative or positive, depending on the strength and nature of the emotion involved as well as its associated learning context.

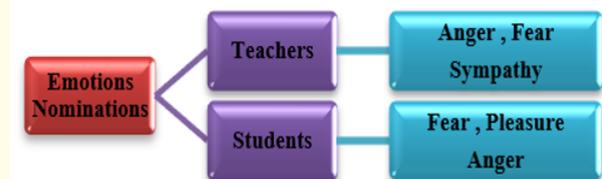


Figure 1: Teachers and Students Nomination of Emotions.

Causes of emotional reactions

The course and the interaction in the environment are the causes of emotions more often than the technical environment.

Vuorela and Nummenmaa (2006) examined which events cause emotional reactions in students. In a collaborative learning environment, 'the course design in general' and 'interactions within learning environment' bring about emotions more than the causes relating to the functionality of technology. There could be significant changes in students' affective reactivity during the different periods of the course.

Emotions and learner model

Emotion is a quick process focused on an event and consists of a trigger mechanism based on the relevance that shapes a multiple emotional response (Pasquier and Paulmaz 2005). The Emotions and Learner model is proposed as below which consist of three types of agents involved in the process. These are:

- **Tutor Agent:** It is the agent in charge of managing the courses and cognitive status of the e-learner.
- **Style Agent:** It determines the suitable learning style of the e-learner (Derouch 2010).
- **Emotional Agent:** It determines the emotional status of the e-learner using the results of voice analysis and the feedback.

We have expanded this model and have included the students' evaluation by the system. The information could be recognized through four major recognition processes. The each individual component is used to define the phases of the Emotions and Learner model.

E-learning research

E-learning Technology is full of difficulties. Bulfin., et al. (2010) have surveyed various research activities and observed that descriptive research was commonly used by about 50%. They also concluded that about 32% researchers used collaborative research (as participatory methods), 25% comparative research, 25% experimental research, 15% design-based research.

In the model as we have mentioned in fig-2 discuss about the three basic approach of the emotions such as, Perception: It is a process of analyzing the view facts in terms of logical ideas which are virtual in nature. Where as the Control is used to define the cognitive or appraisal approach based on which the problem has to be justified. The Action is used to define the handling strategy using which a problem can be solved.

If we consider the emotional factor for a human then any emotional facts or data can be easily be identified and solved using these relevant factor. So I have discussed the emotional identification and its analysis in this paper using the above model which defines the successive layer of problem reduction and using this we can easily improve the learning strategy.

Amiet and Reeves (2006) defined design-based approaches because of the complex interactions which take place in educational settings.

Common errors in E-learning research

E-learning evaluation is still deficient and does not have evaluation guidelines (Tzeng., et al. 2006). There should be a roadmap in order to face the most common problems in e-learning research. The roadmap informs about some cautions which must be considered at each stage of the research and recommendations to increase the validity of result. The stages on this map include the followings:

- A research based problems which signify the use and its definition.
- In-depth reviewing of the specific state -of-the-art
- Sufficient sample and assignment to groups
- Appropriate methodology and powerful design
- Variables and data gatherings tools
- Usability of the current statistics.
- Cautions about inference
- Generation and possibility of application results.

Result and Discussion

Emotional model and characteristics

The emotions and their situation are shown in Figure. The experiments have been conducted with the faculty members of different background.

Characteristics of the faculty members

We have conducted research on the faculty members of different gender, age group, teaching experience, discipline and location. A suitable questionnaire was developed and is given in Annexure.

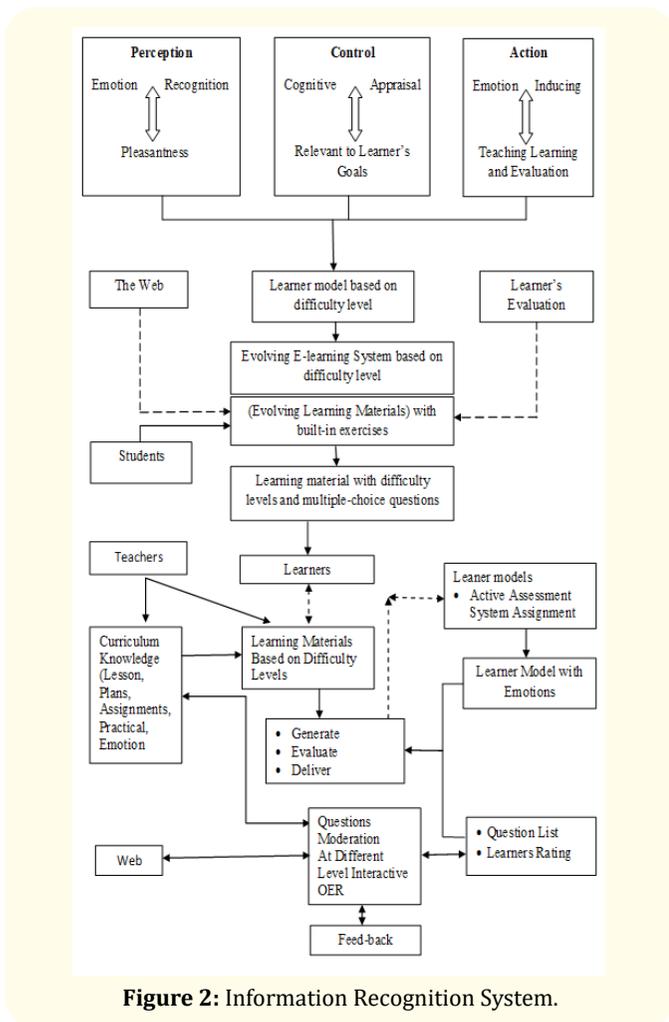


Figure 2: Information Recognition System.

The data at 6 different locations (Ranchi, Patna, Lucknow, Indore, Noida, Chennai) was collected from 1000 faculty members.

The distribution of the faculty members at these locations is shown in Figure 6. The faculty members belong to six disciplines as shown in Figure 7. The male faculty members were 75%. The majority of the faculty members were young (<40 years of age). About 38.5% of the faculty members chosen were Ph.D holders.

The reason for picking faculty members from different streams and experiences was to have a realistic view of emotions suitable for e-learning and AI.

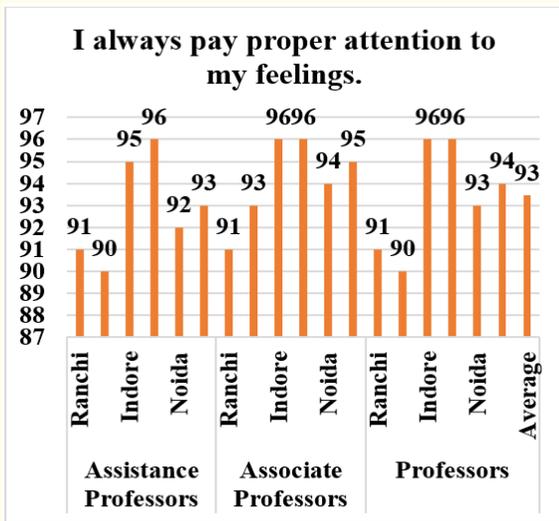


Figure 3: Responses of the Faculty Members to Question 3 (%).

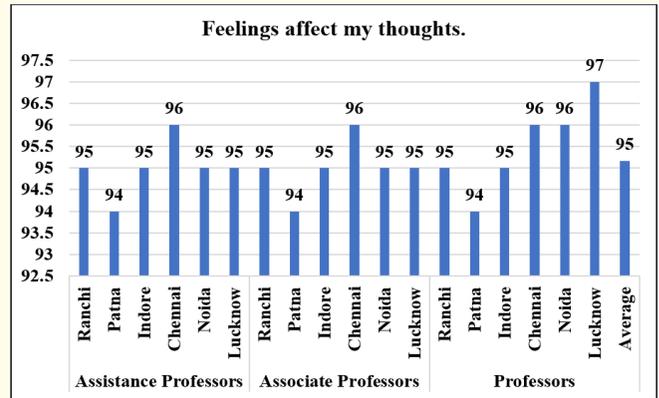


Figure 5: Responses of the Faculty Members to Question 3 (%).

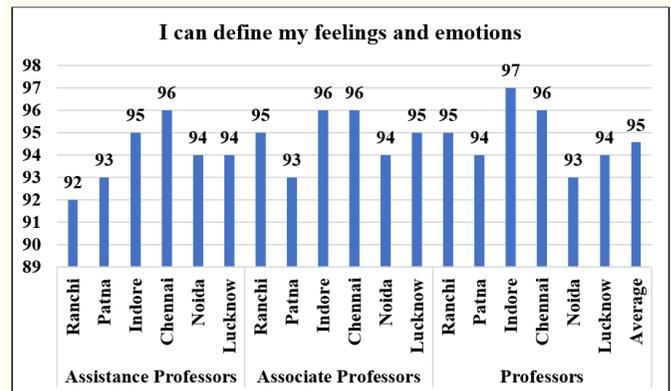


Figure 6: Responses of the Faculty Members to Question 4 (%)

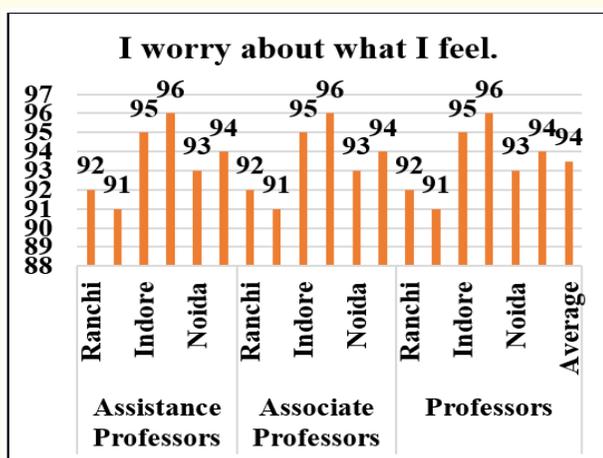


Figure 4: Responses of the Faculty Members to Question 2 (%).

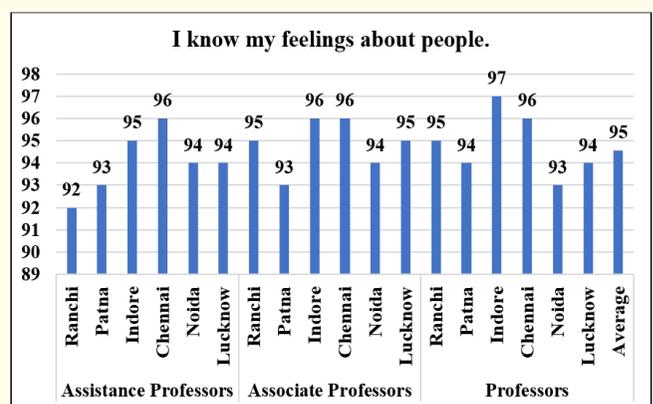


Figure 7: Responses of the Faculty Members to Question 5 (%)

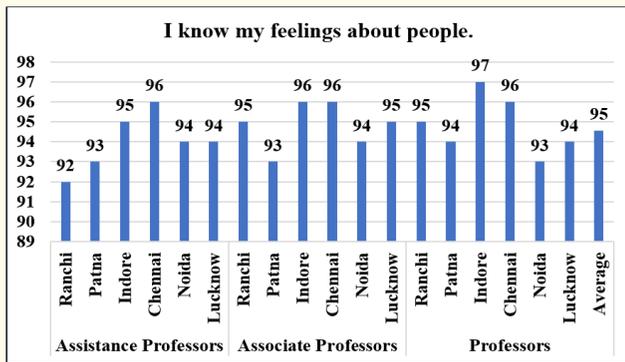


Figure 8: Responses of the Faculty Members to Question 6 (%).

Conclusion

From the above discussion and analysis, we conclude that, the emotions are the factor which often get change form time to time and by change of environment. If we are trying to find the emotion factor then it is bit difficult for a common conclusion that what a machine will analyze and respond. But if we consider out machine model then we can solve the problem up to great extent and hence the response of the system can be enhanced. We can extend the concept in near future to upgrade the model by fusion with Smart Intelligence to respond the system in better manner.

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