VISION SYSTEM FOR HUMAN LEVEL OF INTELLIGENCE

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Abstract— In this competitive world both industrial and academic organizations have been using different learning techniques to improve their knowledge capabilities. However the dynamic change in modern knowledge makes learners activity complex. At the same time, new technologies offer, if used in a right way, a range of possibilities for the efficient design of learning scenarios. For that reason, it is necessary to generate efficient, apt, personalized and flexible learning experiences. At this point of view, computational intelligence methodologies for the level of learner’s can be exploited to provide efficient and intelligent tools for learner’s needs. This paper reports an attempt to achieve these results by exploiting data mining with multi-agent systems frameworks cooperative Vision approach. In particular, it will propose better learner preferences, with high quality learning presentation.

Index Terms— Adaptive Vision algorithms, data mining, multi-agent systems.

INTRODUCTION

For many years, the elderly learning techniques has been commonly implemented by teacher’s to learners in various educational resources.[1] has this been the common implemented using information transfer paradigm .The output yet not been proper for the learners in need. As a learning experience, the teacher should improve the teaching aid. [2].Consequently this generation supports e-learning trends by suitable models,[3] it should support the knowledge management learning system in future.

In particular this e-learning system has the following drawbacks:
1) Not common for all types of learner’s.
2) Learner’s have not been used with various pedagogies.
3) Intelligence has not been improved.

In order to overcome the drawbacks of e-learning methodologies, the contextualization of the learning in activities are considered as the main barriers. This effort will support the whole learning process of the learner’s. As a result the learners will have a personalized achievement and be able to maximize the understanding the level of learning. The result also improves the teaching aid of the teacher. A special approach to face the problem is by Vision learning. Vision learning Approach (VLA) provides a comprehensive framework for creating friendly and congenial learning environment and a variety of learning opportunities for the purpose of enhancing learners. Application of this approach involves the use of different learning techniques and methods. In particular, we propose a VLA algorithm to solve the equipping learners to carry out activities or tasks at entry level of the job with minimum lead time. This can be solved by two steps. The first step involves the collection of pedagogic techniques and the second step involves the collection of Meta heuristics search. An optimized method of local search has been selected by the learners. The combined effect of search undergoes VLA approach by data mining.

This paper is organized as follows, in section II, we present some of the related work, in section III a description of VLA algorithm, in section IV proposed optimized framework of this paper, in section V we present conclusion.

RELATED WORKS

In recent days many solution are there by different kinds of technologies based on knowledge. In particular the web resources than VSM and EFCM [4] are based on learning concept. However some authors pointed the learning for engineering program [5].Eventhough many learning technologies have been brought forward, it was difficult for the learners to follow the technologies on their needs. A personalized learning experience has been given on this proposal to improve the skills on learning environment.

LEARNING ENVIRONMENT

The proposed learning system develops the habit of reflecting on their teaching learning process. The three
modules enhance their professional skills through action and evaluation.
The modules are listed below

1. **Levels of learner’s model** represent the various groups of learners.
2. **Learner’s Approach Model** represents the learner’s to post his learning techniques.
3. **Intelligence model** represents the whole learning experience and the intelligence improved by learning.

Our system uses these models to automate some of the emphases of teaching/learning process. Once the selection of path has been proposed by the learner a clear presentation will be applied by VLA. At the end of the session the learner should be able to gain the intrapersonal intelligence and the interpersonal intelligence.

*Level of learner’s model.*

There are three levels in learner’s module. Level I, Level II and Level III. Level-I makes the understandability of kids learners, Level-II makes the experience learning to the Engineering programme students and Level-III explains the needs to the research oriented learners.

In level-I the kids approach learners are provided with some of the pedagogy techniques .As an example we consider to learn a concept say ascending order and descending order in the subject mathematics. The pedagogy techniques listed may be by demo, games, brainstorming, Visualization etc. The teaching aid can be selected by multi-agent systems[6] and as the output the student gains logical-mathematical intelligence.

Level-II is for approach to engineering programme level, for this lets the concept to be learnt is ‘database management system’. In particular to understand the concept he has to move from known to unknown. The related information to ‘database management systems’ are called known information such as ‘data’, overview of ‘database’ and then it will be clear with database management system by selecting the appropriate techniques used in meta-heuristic search or pedagogy search .So the learner be representing highest order of thinking level. For example, Fig. 1 represent the new terms are defined by:

- **Remembering**: Retrieving, recognizing, and recalling relevant knowledge from long-term memory. E.g. Data, Database
- **Understanding**: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining. e.g. Comparing with data and database
- **Applying**: Carrying out or using a procedure through executing, or implementing. E.g. carry with real time examples such as banking
- **Analyzing**: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing. E.g. in what application it can be used.

**Evaluating**: Making judgments based on criteria and standards through checking and critiquing.e.g. usage of concept

**Creating**: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

![Fig.1 Level II learning approach](image_url)

The learning activity performed by Level III was Researchers work where it is done by activity type such as text reading, video clips, simulation, discussion with the peer etc. Level III undergoes e-learning with meta-heuristic search. [7]

**b. Learner’s Approach Model**

The learner is the main actor of the whole learning process and it is represented with cognitive state and set of learning preferences. In an active learning process the learners are involved in an engaged with the content to be studied. The techniques are based on critical pedagogies where in the knowledge is not transmitted from the teachers to the learners rather than the learner discover/construct a new knowledge. Some of the active learning methodologies are selected by the level of learners which are listed below:

1. **Brainstorming**: This involves allotting a task/theme and asking participants to critically think and generate ideas in a limited time period, either individually or in a group. This technique is used to
generate large number of ideas that are to evaluated and debated subsequently.

2. Case study discussion: In a case study discussion the participant is required to contemplate upon a real life situation and arrive at possible solutions. The method is used for enhancing analytical skills of the learner.

3. Group Discussion: It is a formal and verbal exchange of ideas and opinions amongst group members on a specific and familiar topic. In this methodology, the group members are expected to reflect on the given topic for a specified period and subsequently and present a consolidates set of views of the group.

4. Impersonation: Impersonation as a teaching-learning technique involves imitation of the behavior or actions of someone of something.

The learning styles can be given by meta-heuristic search. The meta-heuristic search of studies is evaluated by giving the grade for the degree of knowledge and indicated by the function $CS \rightarrow [0, 10]$, where $C$ is the concept of a given model. If 0 values are indicated then the concept has no knowledge, whereas if 10 are indicated then it shows the concept is of full knowledge.

c. intelligence model

The unit of learning represents a sequence of learning activities needed for a learner in order to understand the set of concept in the given domain. Intelligence model explains the various intelligence by various means. It is composed by following intelligence:

1. Linguistic intelligence: use language to express and understand complex meaning, creatively uses words.
2. Logical-mathematical intelligence; Calculate, quantify perform complex mathematical or logical operation.
3. Spatial Intelligence: Think in three dimension pictures, graphs, and charts.
4. Kinesthetic-Bodily Intelligence: Use the body in expressive and rhythmic ways.
6. Interpersonal Intelligence: think about and understand about another person. Understand people’s motives, moods and intentions.

An ongoing challenge for teachers is to churn out large number of learners in social/industry needs. But the pedagogic practice institutionalized over the years is increasingly becoming counterproductive and irrelevant to the need of the learners, organization and society. According to this approach what is important is neither the environment of learning nor the learners. Its important how the approach presents and communicates to the learner the fact, principles, laws, concepts, definition and truth of discipline of knowledge. This may be one of the reasons why learners miss out the opportunity to think creatively or critically. Creativity is an important component of problem solving in social, academic

Fig.2 shows the details of intelligence gained by the user.

From the above fig.2 it helps the student to describe the scientific process in the formation and eruption of volcanoes. The figure shows the classification of intelligence gained by various methods. While writing a report linguistic intelligence is gained, by following direction logical-mathematical intelligence, by drawing and labeling a flowchart special intelligence, by acting out process bodily kinesthetic intelligence, by teaching a classmate about the process interpersonal intelligence and by explaining process to tune of well known song musical intelligence are gained and so on.

VISON APPROACH

This section introduces Vision approach to solve the problem on e-learning environment with high quality personalized experiences.

A. Introduction to Vision approach

An ongoing challenge for teachers is to churn out large number of learners in social/industry needs. But the pedagogic practice institutionalized over the years is increasingly becoming counterproductive and irrelevant to the need of the learners, organization and society. According to this approach what is important is neither the environment of learning nor the learners. Its important how the approach presents and communicates to the learner the fact, principles, laws, concepts, definition and truth of discipline of knowledge. This may be one of the reasons why learners miss out the opportunity to think creatively or critically. Creativity is an important component of problem solving in social, academic
and industry success in addition to other higher cognitive abilities.

B. Vision approach with multi agent systems

This section introduces the working of Vision approach. Vision learning approach provides a comprehensive framework for creating friendly and congenial learning environment and a variety of learning opportunities for the purpose of enhancing student learning. Application of this approach involves articulation of learning objectives, planning the curricular transaction, creating a positive teaching environment, identification and use of different learning techniques and methods.

The proposed VLA is computed of three steps.(see Fig.3) The first step shows the various levels of learning. The second step is categorized the teaching aids of learning at various levels. The third steps sets with the agents chosen for learning.

In General at first step a topic has been chosen by the user and they have been given a choice for the selection of needs of certain level. The adaptability of a level will be evaluated by our approach. The level I task undergoes with pedagogies, level II with pedagogies and meta-heuristics, then level III with meta-heuristics. After finalizing of methods the multi-agent system performs its work.

In this takes the form of an adaptive interaction system based on three MAS[8]: the Interaction MAS captures the user preferences applying some define usability metrics (affect, efficiency, helpfulness, control and learn ability). The Learning MAS shows the contents to the user according to the information collected by the Interaction MAS and the Teaching MAS offers recommendations to improve the virtual course.

The interface agent gets the profile of the user and according to the level of learners the techniques are retrieved by data mining and it passes the work to local search agent. The nature of local search agent is performed by considering knowledge coming from interface agent which chooses the prediction techniques. The optimization agent is computed by two steps, in the first step a collection of rank evolutionary meta heuristic learning instances takes place by the range of values \( \omega_i \) where \( \omega_i \) represent the sum of weights of evolutionary meta heuristic. The higher weights represent the rank 10. In the second step the optimization agents continues exploring the search from the local search agent which result various outcomes of intelligence.

The agents use a collection of rules exploiting \( \Omega \) in order to derive the collection of strategies. The algorithm shown below is related to improve the intelligence.

**Algorithm vision**

1. Input: necessary input to generate a topic to obtain searching.
2. Output: gives the optimized result to improve intelligence.
3. Void optimized search (n, m)
4. Analyze the set of levels L to select the apt level.
5. If level \( L \leq n \) then
   (i) Collect the teaching aids
   (ii) for each agent the \( m \) has been passed of more suitable solution.
   else
   Return unsuccessful search
end

**Fig. 4. Vision Pseudo code**

Fig.4 explain the algorithm vision, the input is the related search for levels to be chosen and with the help of multi-agent the teaching aids are displayed to the user and finally it gives the search has been successful or it is of unsuccessful search.

**EXPERIMENTAL RESULTS**

In this section, we want to assess the validity of the proposed approach VLA. In order to do that, let’s see History of previously used techniques.


**TABLE I**

History of previously used techniques.

<table>
<thead>
<tr>
<th>Founder Name</th>
<th>Benjamin Bloom</th>
<th>Patrick Suppes and Richard C. Atkinson</th>
<th>William D. Graziadei</th>
<th>Bates and Poole Continuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology</td>
<td>Bloom’s taxonomy</td>
<td>Desktop computers</td>
<td>Desktop computer</td>
<td>Laptops</td>
</tr>
<tr>
<td>In years</td>
<td>1956</td>
<td>1960s</td>
<td>1993</td>
<td>2005</td>
</tr>
<tr>
<td>Outcome</td>
<td>Classroom learning</td>
<td>Computer based learning</td>
<td>E-mail learning</td>
<td>Blended learning</td>
</tr>
</tbody>
</table>

Performance test

As a first approach it would be interesting to perform some of the preliminary test in order to access the validity of the proposed strategy. We have identified some instances, features and performance of e-learning. The performances are classified by

- Interested learners
- Not interested learners
- Usage of e-learning

The purpose of this test was to graphically interpret the behavior of different performance of e-learning. The results are shown in fig.5. This figure illustrates the performance of e-learning around four years form this graphics we can extract interesting information about the behavior of VLA. In particular it can be observed that although VLA convergent is not the fastest, it obtains the best performance, these are the promising results which can be solved for e-learning.

![Performance of e-learning](image)

**Fig.5. Performance of e-learning.**

Final results are shown in table II. At first glance VLA converts the percentage of non interested learners to interested learners at all levels of learning.

**TABLE II**

Performance in different levels of learning

<table>
<thead>
<tr>
<th>Performance</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>interested</td>
<td>30</td>
<td>34</td>
<td>39</td>
</tr>
<tr>
<td>not interested</td>
<td>35</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>usage</td>
<td>35</td>
<td>38</td>
<td>61</td>
</tr>
</tbody>
</table>

Table II represents the results obtain by each level of learners involved in the experiment. It can be observed e-learning approaches provide the necessary tool to improve learners knowledge in fact, the quantification of knowledge are statistically better with a significance of the 99.9% after using e-learning. Moreover the learners who used VLA have obtained better results than those who did not.

**CONCLUSION**

Recent advances in web 2.0 and its tools (blogs, wikis, podcast, web sharing applications, etc.,) have impulse the development of the so-called e-learning 2.0. It gives the improvement in learning at various stages of education. Authentication can be provided at various stages in future related works.

**REFERENCES**

