Creating an Intelligent learning environment by capturing the face reactions using AI

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ABSTRACT

Learning has always been a major part in our lives.Now-a-days, Online learning had become a way of learning . Hence, we have an Intelligent Learning Environment (ILE) for the students which captures their face reactions using Artificial Intelligence (AI) and depending on the reactions captured the level of difficulty will be changed . Learning has always been a major part in our lives. Now-a-days due to the pandemic we all have adapted to online learning . This learning platform is completely different from what we have learnt till now. The challenge is to easily integrate the system into a smart educational environment based on the requirements of the users. The services rely on a software system that allows access to all the materials for the educational process and makes them electronically available to all the students on the Internet whenever they need and wherever they are. The design and development of this system is a critical part of the educational process as it reflects on the usage of the system. In this work, the design and implementation of the systems is described where different techniques are explored and compared. The proposed e-learning system is designed using off-the-shelf and open-source software engineering model and programming tools and database models. The system is tested to prove the new design concepts and features. The area of intelligent tutoring systems for programming is one in every of the foremost well-investigated topics within the AI-Ed literature. Variety of powerful techniques to assist novice learners are advised, developed, and delineate in many papers. But the "real world" state of affairs with Class Room applications of those systems is not any higher than it had been twenty years past. During this we tend to discuss the uses of integrated Intelligent Learning Environments (ILE) for programming and review existing analysis that forms the background for future analysis during this space. Hence , we provide Intelligent Learning Environment (ILE) to the students and capture their face reactions using Artificial Intelligence (AI) and depending on the reactions captured the level of difficulty will be changed. This system is more convenient and efficient for the students .

Keyword : *Intelligent learning environment (ILE) , AI algorithms , Image Recognition , Image processing*

1. INTRODUCTION

Due to the pandemic around us now-a-days we are majorly focusing on online classes rather than offline classes. Intelligent Learning Enviromnment (ILE) is a computer system which provides students to make efficient use of online classes.There are various levels of the videos fed by the tutor and when the user registers and get access of the course the face reactions of the student is captured .It is then analysed and depending on the reactions the mode of difficulty of the videos will be changed . Our main aim is to make students understand each and every topic . The

face reactions are captured by using AI algorithms . This system is efficient and also more convenient for the student to gain knowledge

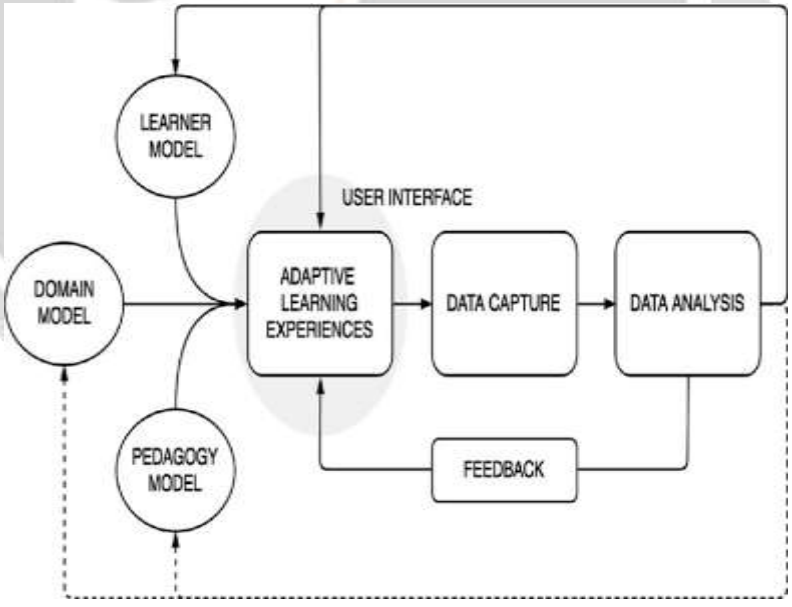
2. OVERVIEW

The area of intelligent tutoring systems for programming is one in every of the foremost well-investigated topics within the AI-Ed literature. Variety of powerful techniques to assist novice learners are advised, developed, and delineate in many papers. But the real world state of affairs with Class Room applications of those systems is not any higher than it had been twenty years past .During this paper we tend to discuss the issues of integrated Intelligent Learning Environments (ILE) for programming and review existing analysis that forms the background for future analysis during this space. Specially, we'll review our work on a student model-cantered design

3. EXISTING SYSTEM

Online learning has been recognized worldwide in the form of easy learning approach.It is a learning procedure which is delivered through the internet , laptops and wireless mobile and hand-held devices which allows learning at any time and anywhere .It takes learning to persons , communities and countries have got previously too remote , socially or geographically , for other categories of educational initiative . It is usually thought as the usage of available information and communication technologies to facilitate the leaning process. It is a combionation of learning as well as the internet technology.It is best and the most convenient way which paves a way for an efficient education

4. PROPOSED SYSTEM



Our analysis at the State University is targeted around 2 issues of making integrated ILE: downside of comprehensive adaptation and also the problem of abstract integration. These problems area unit closely reticulate. Associate degree ILE is comprehensively adaptive if all its elements will adapt dynamically to the actual student. Most ITS and tutoring elements of ILE will adapt their work (tutoring) to a given student, but only a few programming environments and interactive multimedia elements will try this. It absolutely was one in every of our goals to make adaptive programming environments and interactive multimedia elements of ILE. What we tend to created adaptive in our programming environments area unit a visible interpreter and a language-oriented editor . The visual interpreter of ITEM/IP uses the student's current data level to produce adaptive error handling and adaptive visual image. In an exceedingly newer system ITEM/IP-II we tend to additional adaptive informative visual image and an easy adaptive structure editor. Our most up-to-date work is dedicated to the adaptive interactive multimedia part for ILE. We've tried associate degree adaptive presentation technique in 1TEM/IP and examined the issues of adaptive navigation support in ISIS-Tutor.

The students model targeted design separates the student's model into 2 components, the most student model and also the projections. The most student model stands within the center of the setting and collects data :shout the given student from completely different sources. Student interaction with any of the system elements is reportable to the student's model within the sort of normal conceptual- level events. Example: "at time T the students ,sits the hype mode for the construct C for S seconds". These normal events area unit time sealed and keep within the rnoxlel . No more process is performed so as to avoid the loss of necessary data. The most student model could be a central repository of all the data regarding the students that may be used for the aim of adaptation . The elements of associate degree ILE don't use the students model directly, however instead use native views on the students that we tend to decision projections. A projection represents that data regarding the student's thought-about essential for the part to adapt its work to the students.

A part has as made and wide a projection because it desires for the aim of adaptation . A projection is constructed and updated from the most student model by a special set of rules referred to as a projector. Every part has its own projection and projector that provides the interface between the part and also the main student model. A set of the projector rules is employed to project the most student model into the native projection . These rules check with the student's model in their paw sides and contain commands to update the projection in their right sides. Another set of the projector rules is employed to produce reverse projection: with the student's model in their paw sides and contain commands to update the projection in their right sides. Another set of the projector rules is employed to produce reverse projection: events utilized by the most student model

5. SYSTEM REQUIREMENTS

Hardware Requirements:

- HDD : 90 GB
- Processor : Pentium iv 2.4 GHz
- Systrem type : 64-Bit
- RAM : 2 GB
- OS :Windows 7/8/8.1/10

Software Requirements :

- Tool :MATLAB 2019a
- Toolbox : Image Processing
- Database : Mongo Database

6. OBJECTIVES

In the Proposed ILE System helps to, all the students to improve the knowledge. Initial stage we are giving options to chose the language like English or Tamil. after selection of the language , students can enter the required information in the search box. Our AI algorithms match the given keywords to already trained keywords. If keywords are matched means, our system play the video according to their requirements high standard level. After finish the video play, camera is ready to check the students emotions. If the students happy with the given content the AI close the process else again play the new video in under level language.

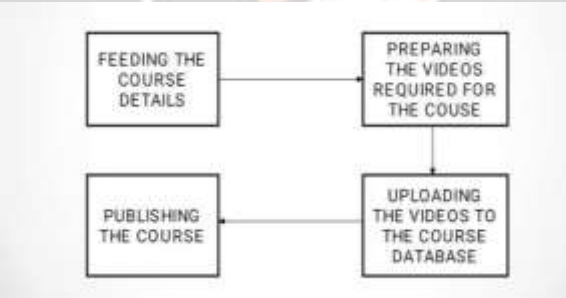
7. IMPLEMENTATION

The implementation of the online learning system is based on the five modules as stated below

- Course Creation
- Keyword Search
- Course Enrollment
- Emotion Recognition
- Course Difficulty Changer

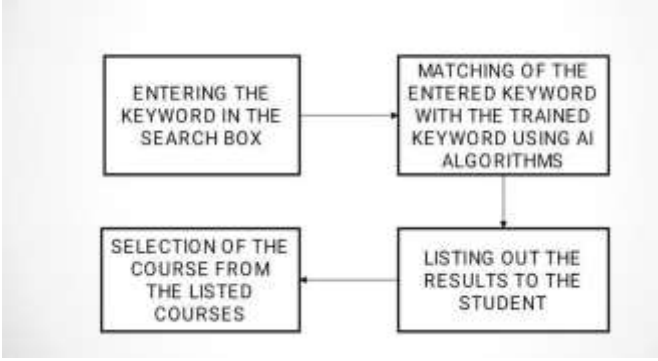
7.1 Course Creation :

Initially , The staff will login into their account.Then , The necessary documents will be uploaded for the learning process for the student .This includes materials , videos , practice exercises , quizzes and syllabus .There will be a specific duration for the completion of the videos within which the student has to complete.



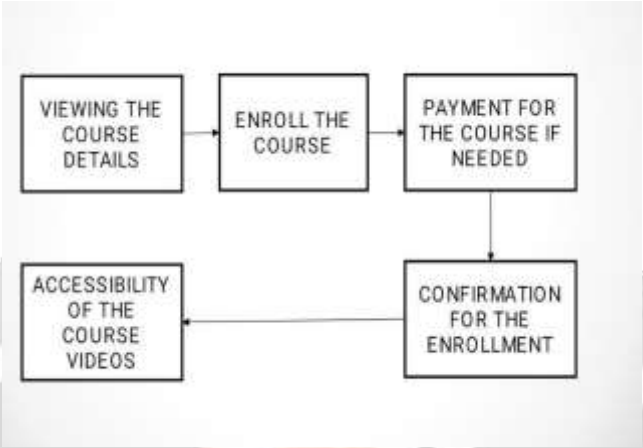
7.2 Keyword Search :

The student will search for the particular course with the help of the keywords given in the syllabus. After typing the necessary keyword in the search box , the AI algorithms will match the searched keyword with the trained keyword and the result will be listed. Then , the selection of the course according to the student's choice is done.



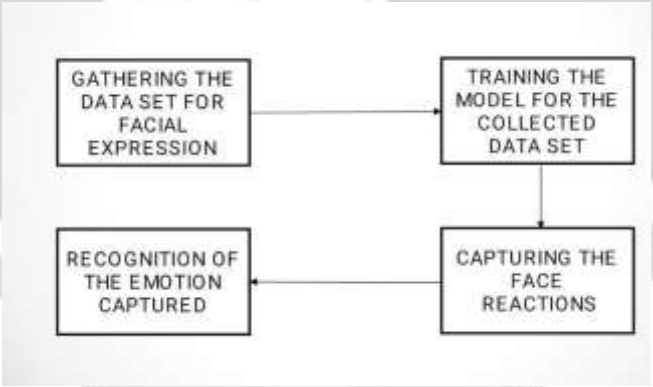
7.3 Course Enrollment :

The Student will view the course details such Number of videos , Payment Details , Author of the course and Description about the course and so on. If the course if free of cost the the student will directly get the access of the Course . If the course is not free of cost , the it will direct to the payment page and once the payment is done the access of the course will be given to the student.



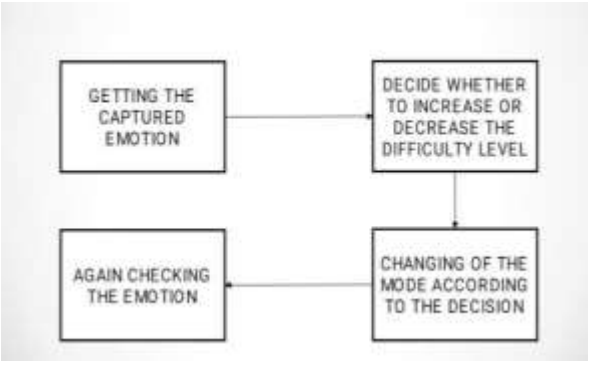
7.4 Emotion Recognition :

The data set for the facial expressions or facial reaction is collected .Then the model is trained according to the collected data set .The facial reactions of the student is captured .The emotion of the student whether he/she is happy or sad is recognized . The emotion is fed as an input to the next module ..



7.5 Course Difficulty Changer :

After gathering the required emotion from the student , The deciding part plays a role.Decision is made whether to increase or decrease the mode of difficulty of the videos or the video will be played again .According to the decision , the difficulty level is changed .Again the emotions are recognized.



8. CHALLENGES

The work given by our schools put a gigantic measure of weight of weight which is staggeringly hard for some to tolerate. Enormous classes in schools put a great pressure on students. Since most information is just remembered and not held for the since a long time ago run, understudies feel lost after school. Many even stay jobless. Numerous schools charge huge expenses, which turns into a weight for guardians. Schools with moderate expenses for the most part have lesser assets, which as a result influence the nature of training. Assessments are primarily focused on final products, instead of persistent learning.

9. CONCLUSION

It is clear that innovation in technology is increasing everywhere and bringing new opportunities for schools, universities and educationalists. Our proposed system architecture differs in such a way that it provides flexible learning style which is adaptable to students' favorite learning styles. It aims to offer a personalized learning environment which suits individual's learning style. Intelligent Learning Environment system helps to increase the learning abilities. It can also be used as a alternative learning method to teach the different IQ level students. There must be technological strategy for the classes, schools and entire learning atmosphere.

10. REFERENCES

[1] E. Allen and J. Seaman. (2013). Changing course: Ten years of tracking online education in the United States. Newburyport, MA, USA: Sloan Consortium

[2] L. Yuan and S. Powell. (2013). MOOCs and open education: Implications for higher education. White Paper, JISC CETIS, Institute for Educational Cybernetics, Bolton, U.K. Retrieved from: http://jisc.cetis.ac.uk/.

[3] Parker, A. Lenhart, and K. Moore. (2011). The digital revolution and higher education. Washington, DC, USA: Pew Research Center.

[4] C. Holt. (1993). Teaching economics with classroom experiments: A symposium. Southern Economic Journal, 65, 603–610.

[5] Zhu, Z.T.; Yu, M.H.; Riezebos, P. A research framework of smart education. Smart Learn. Environ. 2016, 3, 1–17, doi:10.1186/s40561-016- 0026-2.

[6] Gligori´c, N.; Uzelac, A.; Krco, S. Smart classroom: Real-time feedback on lecture quality. In Proceedings of the IEEE International Conference on Pervasive Computing and Communications Workshops, PERCOM Workshops 2012, Lugano, Switzerland, 19 March 2012 pp. 391–394, doi:10.1109/ PerComW. 2012.6197517

[7] Hasan, R.; Ghufran, M.; Javed, S.; Hammad-Ul- Haq.; Azeem, A.; Jamil, D. SMART virtual dental learning environment. In Proceedings of the 4th MEC International Conference on Big Data and Smart City, ICBDSC 2019 Muscat, Oman, 15–16 January 2019 doi:10.110/ CBDSC.2019.8645584.

[8] Udupi, P.K.; Malali, P.; Noronha, H. Big data integration for transition from e-learning to smart learning framework. In Proceedings of the 3rd MEC International Conference on Big Data and Smart City, ICBDSC 2016, Muscat, Oman, 15-16 March 2016; pp. 268–271 doi:10.1109/ ICBDSC. 2016.7460379.

[8] Arora, A.; Hariharan, P. Sensate Benches - A Modern Approach to Education. In Proceedings of the 5th International Conference on Advanced Computing and Communication Systems, ICACCS 2019, Coimbatore, India, 15–16 March 2019; pp. 401–404, doi:10.1109/ICACCS.2019.8728551.

[9] Huang, L.S.; Su, J.Y.; Pao, T.L. A context aware Smart classroom architecture for smart campuses. Appl. Sci. 2019, 9, 1837, doi:10.3390/app9091837.

[10] Khalid, F.; Ali, A.I.; Ali, R.R.; Bhatti, M.S. AREd: Anatomy learning using augmented reality application. In Proceedings of the 2019 International Conference on Engineering and Emerging Technologies (ICEET), Lahore, Pakistan, 21–22 February 2019; pp. 1–6, doi:10.1109/CEET1.2019.8711843.