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Django Based E-Learning Website

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Abstract: ***In this modern world technology is expanding in each and every sector of society. And growth of technology in education system is important which has led to growth and more use of e-learning via different websites. E-learning helps student to access and store data virtually so that it can be easily used irrespective of someone's location. Through this various e-learning portals it becomes easier for teacher to provide data to a lot of students remotely. Technology used to design this e-learning site is python and django.It will allow new user to register them self and existing one can login using their respective ids and password. Teacher can easily interact with students using this e learning platform and also track student performance by organizing various quizzes. Users can also enrollee in different courses at a same time and can view the different content available on site easily.***

This project helps students to enrollee in various free courses and learns new skills by taking a course of their choice .The main focus of this project is not only to provide free courses to students but also to provide a platform to teachers where they can teach many students and provide them knowledge regarding a particular course.

Keywords: Django, python, html, javascript, CSS

I. INTRODUCTION

E-learning or electronic learning is basically learning through electronic technologies. The main of this type of learning is to provide education to students in an easy and more efficient way. It can be in form of webinars, video recordings and also in form of text which is available on different websites nowadays. With e-learning students can have a more good communication with their teachers as they can ask teachers their doubts in personal chat box. E-learning improves the efficiency of learning.

In this project we have made a E-learning site whose aim to provide free learning of various courses to students. As it is time flexible so students can learn new technologies whenever they want as time flexibility engages more learns to learn new things. We have made different modules for students ,Faculty and administer in the website. For the front end part we have used HTML, CSS and JavaScript. And in the back end part we have used database sqlite with django used as web framework that helps in fast development of secure and maintainable website.

Scope of e – learning-

1) The aim of this type of learning is to provide education to students in an advanced way of learning which saves time and many of students and can be remotely accessed from anywhere with internet and smart phones/laptops.
2) In the time of this covid crises all over the world e-laerning is the best way of providing education to students as it does not gather students physically at a time in a single place rather they are gather together virtually like in webinars.
3) E-learning also creates interest in various students to learn new courses with certification provided with it.
4) It also helps students to increase their qualification in various fields and hence students can have more carrieropportunities for them self in future.
5) E-learning also helps students to get more practical knowledge of different courses which help them to indulge more in a course and understand its concepts easily

II. LITERATUREREVIEW

A. *Introduction*

The improvement in technology and E-Learning methods have played a vital role in changing the atmosphere over the learning paradigms. MOOC has evolved as a trend on the internet and also has become very popular. MOOC stands for Massive Open Online Course that can be accessed online from anywhere at any time. These subjects are large and can range from 4 to 12 weeks in length. Students must register online to receive these courses and every week they need to spend 6 to 8 hours. Students must register online to get access to these courses and they need to spend 6 to 8 hours per week. These courses are mainly aimed at promoting higher education, staff development, and self-discipline. These courses are recognized and developed by various reputed universities of MOOC sites around the globe. The key players are Coursera, edx, Khan Academy, NPTEL, Udacity.

B. Literature Survey

1) Title: eLearn central- the journeytoe-learning

Author: Lubica Stuchlikova, Jana Benkovska

Description: They have built up a brand new portal based on the newest Moodle version available then. They have prepared new courses for their portal following the latest e-learning know-how and standards and haveupdatedthepreviouscoursesfromtheir previous portal "eLearn central"(http://ec.elf.stuba.sk), refer to the new "eLearn central" portal (http://kme.elf.stuba.sklmoodle). A 3 level model to use MOOC in India.

2) Title:A3-levelModelforimplementingMOOC inIndia

Authors: AmanSharma&RinkleRani

Description: This paper proposes the idea of implementation of MOOCs in the Indian education system using BLMM as a base for development. It starts by describing the current situation of MOOCs in India and also propose models using three levels of India's education system. Their proposed model envisages influencing the Indian education system in such a way that with a good level of literacy, one can pursue one's interests.

C. Platform & Language

The main focus within this project is to avail the implementation of the full-stack concept and design & develop an E-learn system. Full-stack means 'stack' everything from low-level systems, to system management, and much more, to that higher level, front-end, web development, stuff. It should allow intimate familiarity to the developer with version control systems to be able to reliably produce backups and shareable collaborative collection of code tracked for changes across time.

D. Platform

Thefirststepwastochooseagoodreliablelanguageandaplatformfortheimplementation of the proposed system. Iselectedthe DJANGO platform. The developers built a Django Web framework with Python that allows for faster development and implementation of pragmatic design in web design. Django is built with the focus of allowing ease in the development process without creating inflictions of Web development. It's 100% free and open-source to all the developers and for extending the Django framework as well as the private web development. This makes the app running speed much faster. From concept to production and production, Django helps make it both economical and efficient. Security-related errors and mistakes are prevented in the Djangoenvironment. Engineers often make mistakes such as phishing requests, SQL injection, website text, and clicks. Whenever there is high traffic on the website, the benefits of the Django framework can be seen. Therefore, the sites having a lot of active users use this method to meet immediate traffic needs. Content management, computer science forums, and large corporations, all of these aspects are best handled with Django use. More detailed data is available at https://www.djangoproject.com/

III. APPROACH

A. Software Development Life Cycle

Software Development Life Cycle (SDLC) is a framework that describes the steps involved in software development at each stage. It includes a detailed plan to build, supply and maintain software from its inception to retirement.

The SDLC defined its categories as Requirement Collection, Design, Coding, Testing, and Care. It is important to adhere to the stages of Product Delivery in an orderly manner.

1) Planning

a) It is the initial phase in which we highlight the scope of our problem and try to analyze the problem carefully in order to find the respective solutions.

b) We consider many aspects in this stage which involves Resources we are going to need, the time duration in which we would achieve our goal, and a rough idea of the total cost we are going to need.

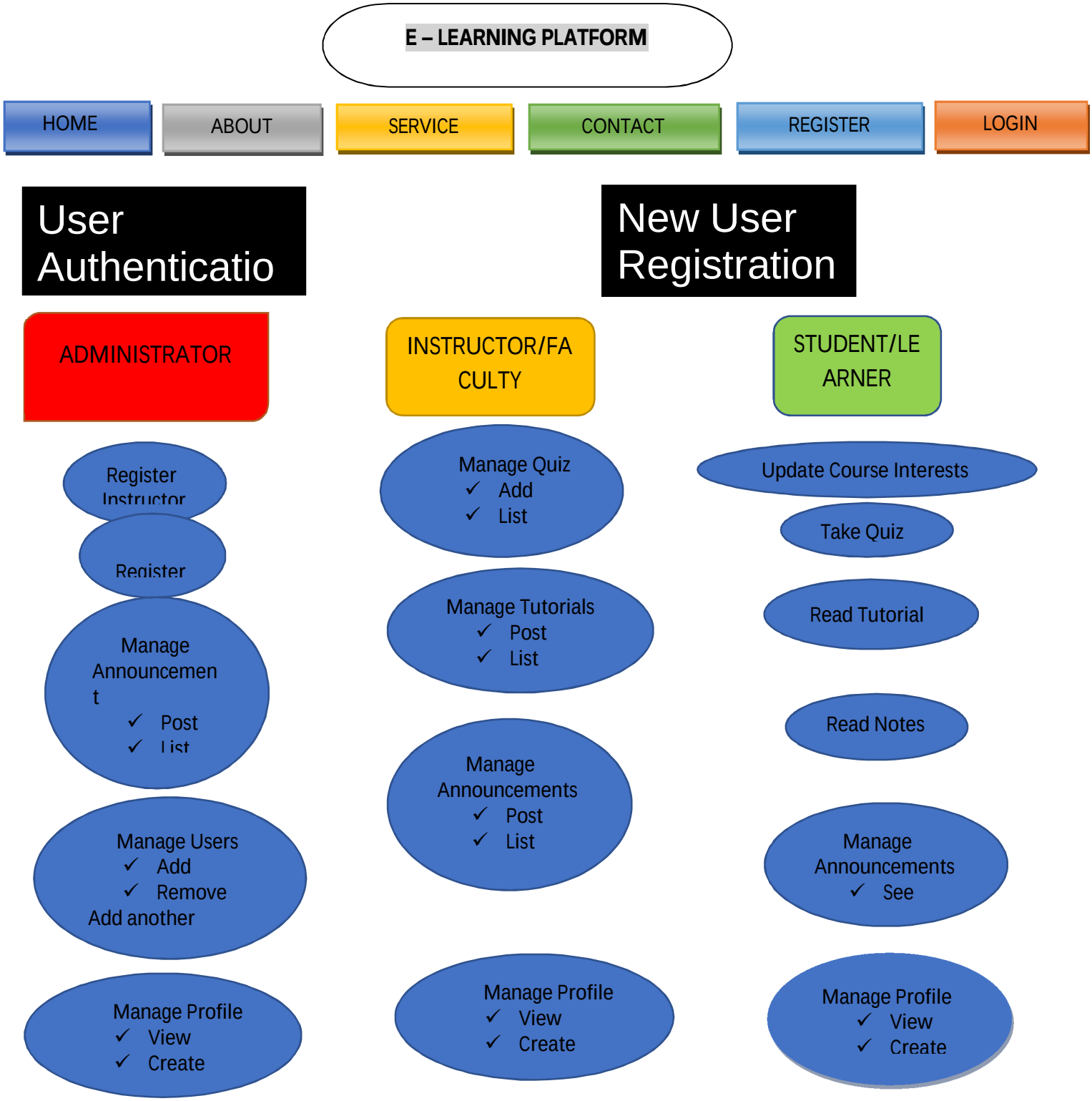
c) It is the phase where we first identify the tasks, then assign them accordingly to the teammates with respect to their interests and strengths.

d) The whole structure which contains a directional set of tasks that we are going to follow from start to end is developed in this phase.

e) It is one of the most crucial phases in order to achieve success in the project, as the whole plan that we are going to follow is developed in thisstage

2) Designing

The following objectives were proposed in order for the successful development of the project.



3) Requirements

Following are the requirements for implementing all the planned functionalities:

a) Functional Requirements

- Home Page View
- About Page View
- Services Page View
- Contact Page View
- Registration Page View
- Login Page View
- User Registration Form
- User Login Form
- User Authentication Model

b) Admin Dashboard

- Admin Dashboard View
- Django predefined**UserCreationForm** and **user model** to collect new Learner's data andAdd them.
- Django predefined**UserCreationForm** and **user model** to collect new Instructor's data and Add them.
- Course model and HTML form to collect new course data and add a new course
- Announcement model and HTML form to Post announcement
  Announcement model and Generic ListView to List announcements
- Announcement model, predefined **delete** method, and generic DeleteView to List delete announcements
- User model and Generic ListView to List users
- User model, predefined **delete** method, and generic DeleteView to Delete users
- User model to collect data by post method and register new Admin user
- Profile model and HTML form to collect data and create a profile
- Genric filter method to filter by id and view a profile

c) Instructor Dashboard

- Instructor Dashboard View
- Quiz model, html form & Generic CreateView to create and save a quiz
- Quiz model, html form & Generic UpdateView to add questions to a quiz
- Answers model and formset abstraction layer to add options
- Tutorials model and html form to Post tutorials
- Tutorials model and Generic ListView to List tutorials
- Notes model and model form to add notes
- Update notes
- Announcement model and html form to Post announcement
- Announcement model and Generic ListView to List announcements
- Profile model and html form to collect data and create a profile
- Genric filter method to filter by id and view a profile

d) Learner Dashboard

- Learner Dashboard View
- Tutorials model, Html form & Generic DetailView to dispaly Tutorials
- Notes model, Html form & Generic ListeView to display notes
- Learners model, HTML form & Generic UpdateView to update course interests
- Take quiz form and learners answer model to collect Quiz responses
- Announcement model and Generic ListView to display announcements
- Profile model and HTML form to collect data and create a profile
- Genric filter method to filter by id and view a profile

e) Technical Requirements

Various front-end and back-end technologies are available in this era of digitalization. The technologies used in this project are

a) FRONT-END

- HTML
- CSS
- JAVASCRIPT
- BOOTSTRAP

b) BACK-END

- PYTHON
- DJANGO
- SQLITE
- JINJA2

4) Methodology

The Project is developed via multiple steps. The major steps are enlisted here:

a) Installing Python and adding it to path.

b) Creation of Virtual Environment

- Python -m venvenvname(any name)

c) Installing Django

- pip install Django

d) Go to Destination Place where you want the project to be kept, using cd command.

e) Create Project as follows

- django-admin startprojectprojectname(any name)
- cd projectname

f) Create App of the project as

- django-admin startappappname(any name)
- python manage.py makemigrations
- python manage.py migrate

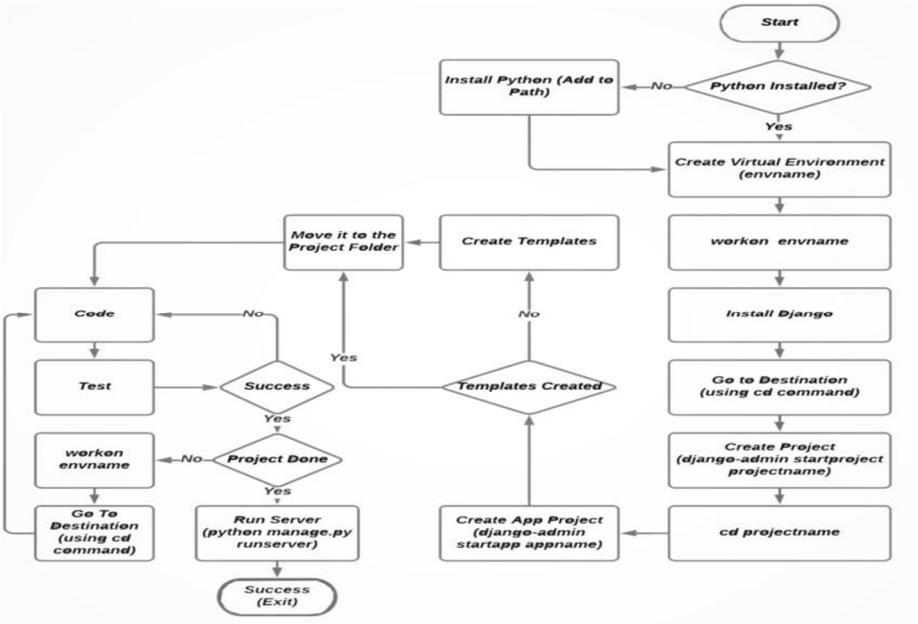
g) Copy all the frontend files(html forms) to the templates folder

h) Copy all images to static folder

i) Run Server (localhost:8000)

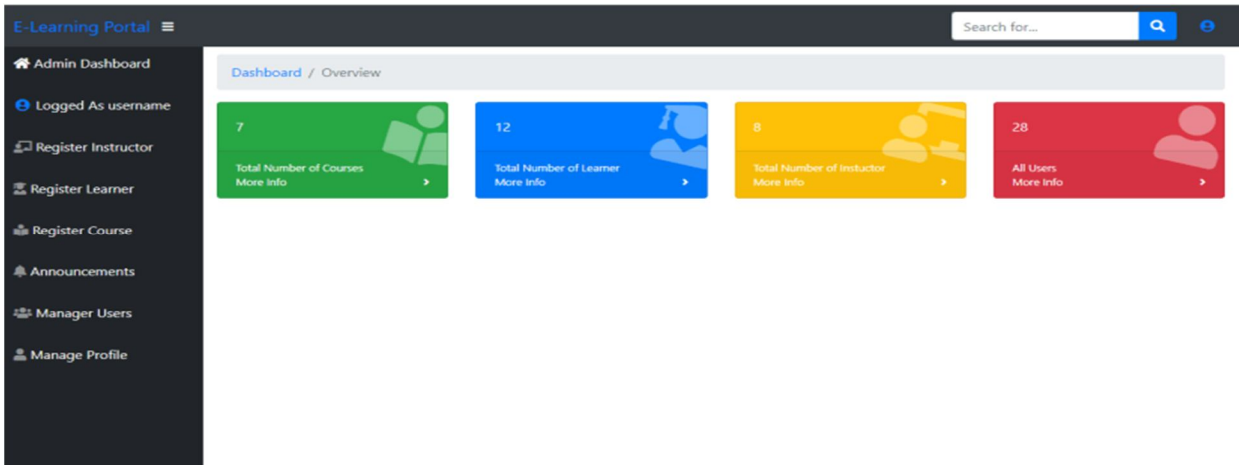
- python manage.py runserver

The code of backend and frontend can be coded in any code editor (Notepad++ was used in this project).

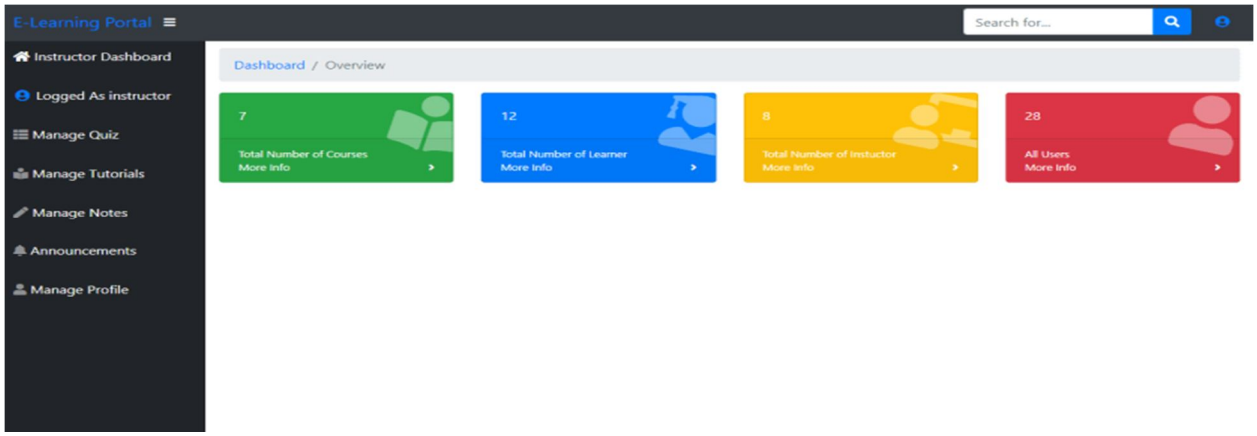


IV. RESULTS

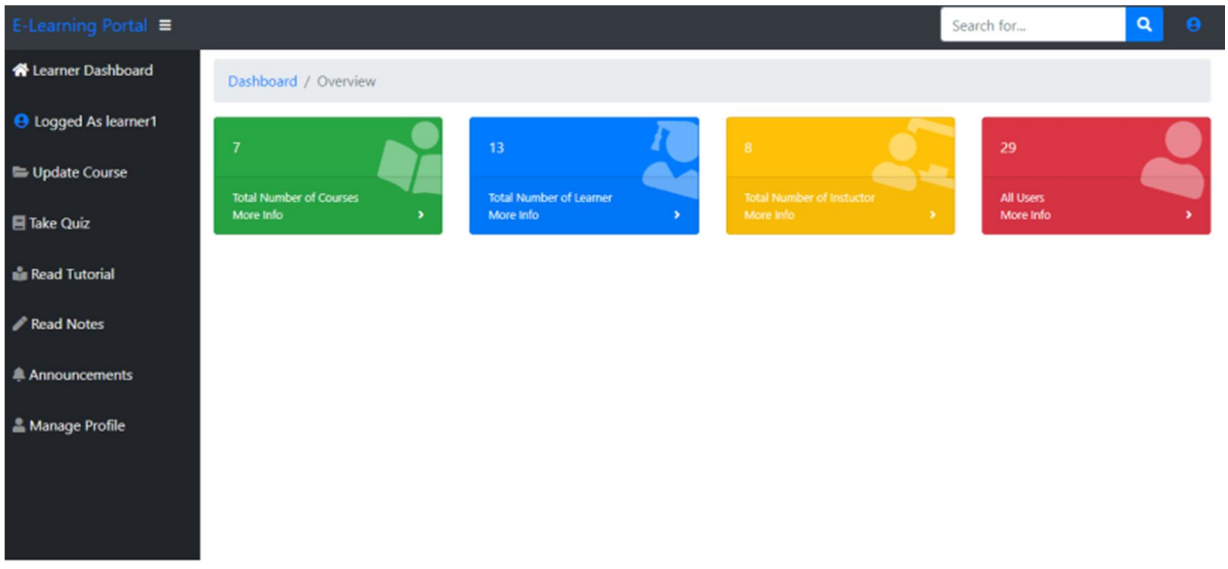
A. *Admin Dashboard*



B. *Instructor Dashbiard*



C. *Learner Dashboard*



V. FUTURE SCOPE

Technology has enhanced the learning experience for students. Although the basic building block of education is still reading, writing, and arithmetic, there is no doubt that today's students will also need a wider education in order to be effective contributors in the future.

E-learning helps in delevering following technology:

Live Classroom: Certain institution may require expertise educators. With the help of live streaming, these educators can remain at one location and can provide knowledge to many students present in other areas. This type of technology helps in increasing as students to gain knowledge and move into higher levels of education, for example towards advanced and higher degrees in any field. Video conferencing technology may also be used to provide classes between students and educators.

Recorded Video content: Pre-recorded content such as documentaries, lectures, and other video services may be provided so that the content can be seen when needed.

Student-to-student communication (video conferencing): Related to the first point, students can learn so much from each other as they do from teachers. Hence, such technology can be used for connecting students in different areas or even different countries of the world so that they may meet virtually.

Virtual test evaluation: In some countries around the world, standardised tests are used to evaluate students on a their respective field of study. These tests must be delivered securely and on time to meet testing schedules. In India, for example, this is a very huge task simply because of population growth. Hence digital delivery of resources can only be the solution.

Updated materials: As mentioned above, the basics change. However, virtually all textbooks must be updated regularly. Physical textbooks are very expensive to be afforded by everyone, maintain, and deliver. Again, digital availability of resources solves this issue when provided with e-Reading utilities such as tablets.

Learning on our own: Computer-based learning or self learning is common in such higher degree and practical based learning. Thus it helps a student to learn things according to their speed of learning.

Teachers and educators can also take advantage of the such technology to interact with their peers, students, and parents using email and social media.

At the higher degree level, collaborating is very important thing for research. Post-graduate students working in rural areas as part of their research may be able to consult educators at the institution when needed. For example, in the any field, any technology is growing rapidly and can only be provided using broadband connections.

VI. CONCLUSION

In both underdeveloped and developing countries, e-learning increases the level of literacy, education, and economic Growth. This is especially true for countries where education is costly and opportunities are limited, and economic problem exist.

It's because of satellite technology, the price have drastically come down so that every student—whether a school student or college going student doing in a rural area— can take full use of bandwidth provided by satellite systems, opening up a world of opportunities.

Although the Indian market is still young, it will continue to adopt the technology of e-learning in order to meet their respective business and employment needs

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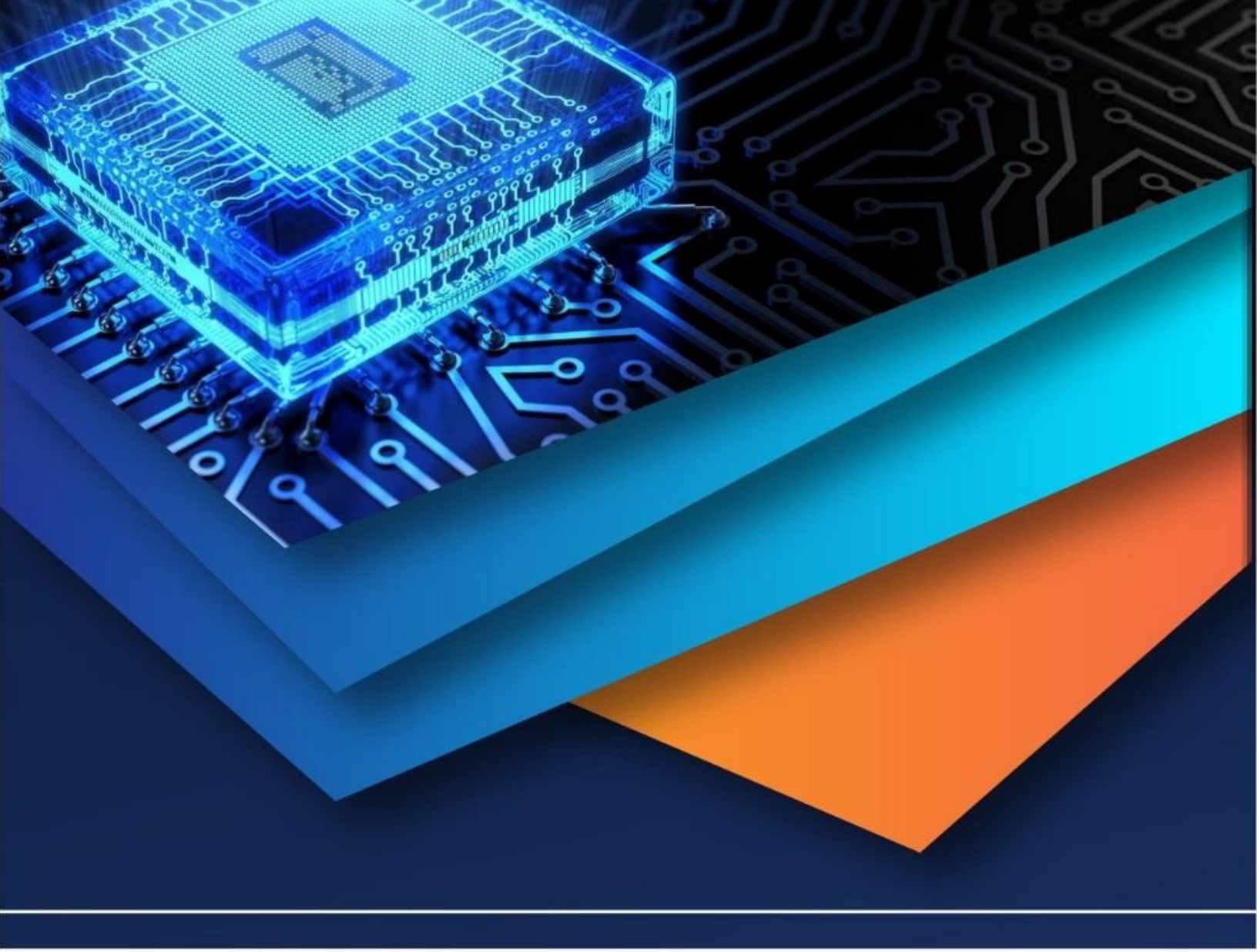

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