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Virtual Environment for Labs & Projects

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Abstract: ***The purpose of the Virtual Lab project is to provide students with online access to a variety of engineering control experiments, located in the laboratory control of several laboratories. Three German universities are currently developing the Virtual Lab as a network of remote access laboratories to establish a pilot testing facility. Assumed students are usually located in an area that is geographically distributed (e.g. at home) and are able to access far from our tests. Virtual Lab is based on the concept of grade learning because some students (e.g. professionals) may be interested in studying even in the most remote areas of the campus which eliminates the need for personal presence. In Virtual Lab they are able to acquire some practice of controlling theory in their own time saving time and travel costs. A Java-based client / server-based approach is proposed. This paper discusses the requirements for remote testing and presents the technical structure and initial results of the project.***
Keywords: Virtual Lab, Virtual machine, Online labs, Projects

I. INTRODUCTION

The virtual lab is a way to learn almost. A visual laboratory is a type of educational technology that supports improved learning that meets the needs of home and urban education with a high degree of flexibility and reduces anxiety about time and space. In the current or previous system teachers teach the student but sometimes if there is a question in any student they are not comfortable asking the teacher a question, then the concept is not well understood by the student. Sometimes a student or lab user wants access to the laboratory but a pre-defined schedule for the lab or lab is given to another user, in which case the user is unable to provide more work or practice time due to the lab schedule. Also, the time limit is there when the laboratory opens and closes. If any user wants to practice at home the web equipment is very expensive, that is unlikely for the user to purchase. Some laboratory time is given to the user but for any reason the user cannot go to what works and that is a complete loss to the user. Good laboratory equipment and updated laboratory testing are essential for any engineering college. Distance and lack of resources make it difficult to do tests. If any user does not understand the concept and the user wants to make a visual duplication that is also limited. This previous program limit is resolved by a Virtual Lab.

II. LITERATURE SURVEY

Paper [1]: Authors: Rakhi Radhamani, Hemalatha Sasidharakurup, Gopika Sujatha, Bipin Nair, Krishnashree Achuthan In the Virtual Labs Improve Student's Performance in a Classroom. these authors are work on the virtual laboratory; they are explaining the concept of virtual laboratory for improving the students' performance in classroom. Their purpose of developing the virtual laboratory is to analyse the role of Biotechnology virtual laboratories in integrating student's learning ability and introducing it as an effective instructional tool in biotechnology courses. Their virtual laboratory work is related to the biotechnology field, Biotechnology laboratories are containing the equipment are very costly in a corer rupees, it is very expensive so reduce the cost and student learning is increase. In these the usage analysis and surveys indicated that biotechnology virtual labs are significant elements in adaptive learning process in blended classroom environment. [2] "Study on information system of health care services management in hospital".

Paper [2]: Authors: Krishnashree Achuthan, K. S. Sreelatha, et.al In the VALUE @ Amrita Virtual Labs Project Using Web Technology to Provide Virtual Laboratory Access to Students, these authors are work on the virtual laboratory, they are explain the concept of Virtual Labs was initiated to provide laboratory-learning experiences to college and university students across India who may not have access to adequate laboratory facilities or equipment. Amrita Vishwa Vidyapeetham University (Amrita University) is part of a consortium of twelve institutions building over two hundred virtual labs covering nine key disciplines in science and engineering. Amrita Vishwa Vidyapeetham University design and develop the virtual laboratory for science and engineering student, that includes the chemical science, physical science, biotechnology engineering, electrical engineering, mechanical engineering, electronics and communication engineering, computer science and engineering fields.

Paper [3]: Authors: Tanuja Sheorey and Vijay Kumar Gupta In Effective Virtual Laboratory Content Generation and Accessibility for Enhanced Skill Development through ICT, Tanuja Sheorey and Vijay Kumar Gupta, authors are explaining the virtual laboratory concept for the focus to emphasize on enhancement of skill development through ICT, using standard virtual laboratory

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content generation and making them easily accessible across all the student population. In this they are work for on-line quizzes and projectbased assignments in each virtual experiment will scale-up conceptual understanding and discovery-based learning, unlike verification based conventional experiments.

Paper [4]: Authors: Ms. Shweta Soni The present system is the manual one. Hence all the information about the Student, courses and faculty details maintained in the file. For Faculty, they have different-different files for different purpose, Like separate file for student details, attendance and separate file for report etc. For Student, they have different-different notebooks for different subjects; sometimes they forget something during lecture. This Virtual Classroom System is available anytime without any restriction that means we can access 24 hours a day. Although lab application in students' learning has a very important place in science education.It has some limits and problems, especially in developing countries. India is also one of the developing countries so India also face the same problem.

Paper [5]: Authors: Shyam Diwakar, Rakhi Radhamani, Hemalatha Sasidharakurup, Dhanush Kumar, Nijin Nizar, Krishnashree Achuthan Virtual labs are popularized as a visual education tool that offers diverse analysis of experiments through different components like graphics mediated animations, mathematically modelled simulations, user-interactive emulations, remote-triggered experiments and the use of augmented perception haptic devices. With the advances in ICT-based education, virtual labs have become a novel platform that helps users to engage in their proactive learning process. Our goal was to analyse the effective role of biotechnology virtual labs in improving academic performance of students and complementing classroom education. We tested the adaptability, perceived usefulness and ease of use of biotechnology virtual labs on different user groups in sciences and engineering.

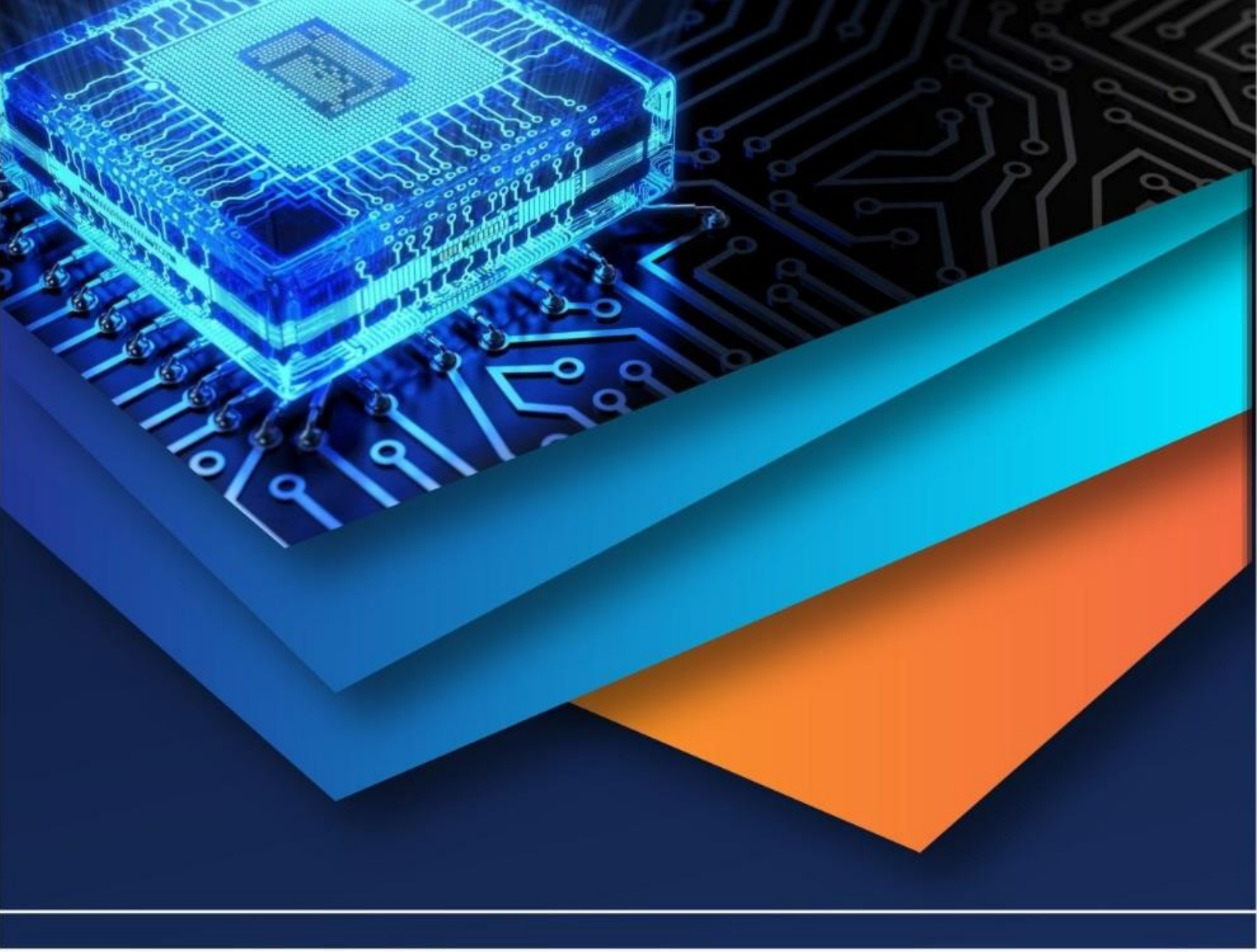
III. OBJECTIVES OF THE PROJECT

A. Provide remote access to labs in various fields of computer science and engineering.
B. To enable students to learn in their environment, and to arouse their curiosity.
C. Provide a comprehensive learning management system that includes a collaborative environment.
D. Provide Advanced Computer Equipment to perform large calculations.
E. Provide excellent security and reliable resources.
F. Most effective ways to promote high consumption.
G. Avoid paying too much for hardware purchases.

IV. CONCLUSION

Virtual Environment for Labs and Projects is a paradigm shift in the field of remote online-based testing. The Virtual Environment for Labs project has set the standard for technology for this project. This is good for growing and transferring technology. Some of the key contributions of this project are the development of (a) a standard website for hosting all computer science labs, (b) a standard quality control process, (c) a standard field testing process. The Virtual Environment Labs project has also changed the novel's approach to field testing, access and quality control. These online labs offer the greatest benefit depending on the number of students who can access these labs and the cost. Online labs under Virtual Environment for Labs and projects not only arouse curiosity in students but also allow them to learn at their own pace. Pedagogy is focused on students. The effectiveness of these labs is reflected in their use outside the lab hours, even at night. Virtual Labs is truly 'any place, any speed, any time, any kind'! '.

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