Simulated Educational Exam System using IoT

1Mr. Lokesh K. Marne, 2Mr. Janardan S.Mahajan, 3Mr. Shubham R.Malegaonkar, 4Mr. Ankit R. Hinge,
5Prof. Suhas M. Patil

1,2,3,4,5 Dept. of Computer Engineering, KJCOEMR, Pune, India

Abstract-The Internet of Things(IOT) is the inter-networking of physical devices and it provides the ability to transfer a data over a network. In general examination system, there are more chances to get paper hacked i.e. security issues as well as unauthorized access to exam module. to overcome this problems, we are going to provide an efficient education system which helps to avoid the security issues. We erase also generating certificates.

Keywords-Learning Management System(LMS),Cryptography, Quick Response(QR) Code, Advance Encryption Standard(AES) Algorithm, Service Oriented, Master Shared Key(MSK).

I. INTRODUCTION

This aims to identify various vulnerabilities that may violate exam security in m-learning environments and to design the appropriate security services and countermeasures that can be put in place to ensure exam security. It also aims to integrate the resulting Simulated Educational exam system with an existing, open source and widely accepted Learning Management System (LMS) and its service extension to the m-learning environment, namely the Moodbile Project. To design a Simulated Educational Exam System (SEES) that meets the distinct security requirements of m-learning environments and to integrate it with the current Moodle/Moodbile platform. This will result in a complete LMS that is both equipped with secure exam services and suitable for m-learning. Our intention of integrating SEES with a well-known LMS such as Moodle is so to get the benefits of Moodle's ready-made services in other learning aspects such as course material administration, documentation, etc. which have been experienced and appreciated for the last 15 years. However, the proposed SEES can also work as a standalone Simulated Educational Exam System for m-learning environments without integration with Moodle.

II. LITERATURE SURVEY

1. Accelerating Computer Vision Algorithms Using OpenCL Framework On The Mobile GPU A Case Study

This system proposes to accelerate an exemplar-based inpainting algorithm for object removal on a mobile GPU using OpenCL. The methodology of exploring the parallelism in the algorithm as well as several optimization techniques. Experimental results demonstrate that optimization strategies for mobile GPUs have significantly reduced the processing time and make computationally intensive computer vision algorithms feasible for a mobile device. Mobile computing technology has grown significantly over the past decade. As mobile processors are gaining more computing capability, they are witnessing a rapid growth of computer vision applications on mobile devices, such as image editing, augmented reality, object recognition and so on.[1]

2. Mobile learning in review: Opportunities and challenges for learners, teachers, and institutions Rachel Cobcroft, Stephen Towers, Judith Smith Axel Bruns Creative Industries Faculty Queensland University of Technology, AUSTRALIA

Rapid developments in information and communications technologies (ICT) and evolving learner behaviors require learning institutions to continuously reevaluate their approaches to pedagogy, both in the physical and virtual classroom spaces. The increasing availability of low cost mobile and wireless devices and associated infrastructure heralds both opportunities and challenges for educational institutions and their teachers and learners. This system advocates the development of a best practice framework to guide future action and thinking.[2]


A system to create mobile interactive learning trails. The system includes a web portal running on the Amazon cloud server for people without programming skill to create trails for outdoor fieldtrip learning, and two universal apps for iOS and Android phones respectively to run different learning trails. It enables rapid and easy creation of learning trails within 15 minutes without mobile app development. The learning contents can be customized by teachers, and activated by snapping
pictures from physical Objects of Interest (OOI) or entering a geographic area. Image recognition technology is used to identify which OOI that the picture is captured from, and return relevant contents pre-associated with the OOIs.[3]

4. Interoperability for LMS: The Missing Piece to Become the Common Place for Elearning Innovation

Marc Alier, Enric Mayol, Jord Forment, Mara Jos Casa Guerrero, Miguel Angel Conde Gonzalez, Francisco Jose Garcia Pealvo, and Charles Severance

This paper speculates about the future of LMSs considering the upcoming new learning applications and technologies, and the different attitudes of learners and teachers, given their technological background described using the digital natives and immigrants metaphor. Interoperability is not just a nice to have feature, but a must have feature for LMS if these systems are going to be the common place where the ICT empowered learning innovation happens. After analyzing some standards and initiatives related to interoperability on LMS, the authors present an overview of the architecture for interoperability they propose. This architecture is being implemented for the well known Open Source LMS Moodle.[4]

5. Mobile Learning in Mobile Cloud Computing Environment

Author: Stojan Kitanov, Danco Davcev

This paper presents a new model of mobile distance learning system (MCC) in an extended Mobile Cloud Computing (MCC) by using High Performance Computing (HPC) Cluster Infrastructure, as well as some existing videoconferencing technologies enriched with mobile and wireless devices. This MCC model can be applied everywhere where there is need of fast and intensive computing and analysis of huge amounts of data, such as modeling 3D graphics visualization and animation in ecology, global climate solutions, financial risks, healthcare and medical learning, decoding genome projects, etc. After the MCC model presentation, the experimental system architecture will be provided, as well as its possibilities, with particular reference to mobile learning environment and its potential issues. In this architecture the mobile device may optionally use the open source e-learning course management system platform Moodle, to access the learning material and the relevant data that needs to be transferred to the HPC Cluster Infrastructure for further computing. In order to provide higher quality of presenting the learning material, the Cisco WebEx application will be used to test the distance learning in both fixed and mobile environments.[5]

6. "Extending Moodle Services to Mobile Devices: The Moodbile Project"

Author: Mara Jos Casany, Marc Alier, Enric Mayol, Jord

Learning Management Systems (LMS) are widespread among most education and training institutions. Even though LMSs are mature technology, they have left the vanguard of innovation in e-learning to mobile devices and tablets. Mobile Learning (M-learning) may enhance e-learning by increasing communication and conversation opportunities to convert the learning process more collaborative and learner centered. This paper describes a way to integrate mobile devices and educational applications with a LMS as Moodle through web services: The Moodbile Project. Rather than just creating mobile apps that replicate LMS functionalities on a mobile device, Moodbile provides to mobile developers with the necessary tools to allow mobile devices to interact with the LMS. In this paper, we describe our proposal of an open specification of web services to support the integration of mobile external applications with Moodle.[6]

7. "THE SOCIAL MOBILE LEARNING EXPERIENCES OF STUDENTS USING MOBILE E-BOOKS"

Author: Jeff S. Kissinger, Florida State College

This research was designed to explore the learning experiences of state college students using mobile electronic textbook (e-book) readers. The purpose of the study was to build a rich description of how students used e-books delivered on mobile computing devices for college-level, introductory sociology courses at a public state college in the southeastern United States. This research employed a multiple case study design that investigated and documented student experiences with this instructional technology. The bounding frame was comprised of the literature on mobile technology, mobile learning theories, and e-books. A theoretical lens of learning theories commonly found in the literature on mobile learning (constructivism, social cognitive theory, self-efficacy theory, expectancy-value theory, self-determination theory, and situated cognition) was situated within the mobile learning framework. The theoretical lens was used to provide insight to the students learning experiences.[7]


Authors: D.F. Smith, A. Wiliem, and B.C. Lovell

This paper proposes an approach to counter replay attacks for face recognition on smart consumer devices using a noninvasive challenge and response technique. The image on the screen creates the challenge, and the dynamic reaction from the person's face as they look at the screen forms the response. The sequence of screen images and their associated reactions digitally watermarks the video. By extracting the features from the reaction region, it is possible to determine if the reaction matches...
the sequence of images that were displayed on the screen. Experiments indicate that the face reflection sequences can be classified under ideal conditions with a high degree of confidence. These encouraging results may pave the way for further studies in the use of video analysis for defeating biometric replay attacks on consumer devices.[8]

With the augmented use of Learning Management Systems (LMS) like Moodle, the demand to perform exams online is higher than ever. Providing a dedicated exam room with up to hundreds of computers is possible but very expensive solution. However, performing exams on student laptops increases the number of simultaneous exams but also the possibility for cheating. This paper describes the Secure Exam Environment (SEE) implemented at the AAUK to support exams based on Moodle to be held on student laptops without access to local files or the Internet. Additional programs like Excel or Java applications can be installed and used during the exams.[9]

This paper addresses the role of security in the collaborative e-learning environment, and in particular, the social aspects of security and the importance of identity. It represents a case study, completed in Nov 2004, which was conducted to test the sense of security that students experienced whilst using the wiki platform as a means of online collaboration in the tertiary education environment. Wikis, fully editable Websites, are easily accessible, require no software and allow its contributors (in this case students) to feel a sense of responsibility and ownership. A comparison between two wiki studies will be made whereby one group employed user login and the other maintained anonymity throughout the course of the study. The results consider the democratic participation and evolution of the work requirements over time, which in fact ascertains the non-validity of administrative identification.[10]

III. PROPOSED SYSTEM

Data security represents a key factor in evaluating the trustworthiness of sensor data. Privacy management for networks introduces several challenging requirements, such as low energy and bandwidth consumption, efficient storage and secure transmission. In this project, we are proposing a secure e-learning scheme to securely transmit the data. The proposed system will generate question paper automatically based on user time of attempt. This system will overcome the traditional manual work of faculty to produce a new question paper in a few amount of time.

IV. ARCHITECTURE

V. MATHEMATICAL MODEL

Define the set of system i.e.

\[ S = \{ f; s; e; l; O; DD; NDD; Success; Failure \} \]

Where,

\( s \) = Initial state of the system.
\( e = \text{End state of the system.} \\
I = \text{Input given to the system} \\
I = \{I_1; I_2; I_3\} \\
\)

Where,
\( I_1 = \text{Student Details} \)
\( I_2 = \text{Question Bank} \)
\( I_3 = \text{Generated QR code} \)
\( O = \text{Output of the system} \)
\( O = \{O_1; O_2; O_3\} \)

where,
\( O_1 = \text{QR code is generated.} \)
\( O_2 = \text{Student Detail on mobile} \)
\( O_3 = \text{Question paper generated} \)
\( DD = \text{Deterministic data} \)

It contain the database which consist of student details and questionbank that helps to generate question paper.
\( NDD = \text{Non-deterministic data} \)

If the generated QR code does not match with the existing studentdetails then that is Non-deterministic data.
\( \text{Success} = \text{Desired outcome is generated.} \)
\( \text{Failure} = \text{Desired outcome is not generated.} \)

VI. CONCLUSION

In this the design of a Simulated Educational Exam System (SEES) to mitigate the unique exam security threats that exist in m-learning environments. SEES offers many exam services such as: secure and random distribution of exam questions, turbo-mode assessment, prevention of the unattended exam issue, biometric-based authentication service for anti-impersonation, preventing students from exchanging their devices during an exam, conducting exam securely through online or offline strategies, and auditing.

VII. REFERENCE