Legacy of Smart Device, Social Network and Ubiquitous E-class System

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Abstract— Everyday, technology is evolved in many different disciplines. Computer and smart devices revolution take part of the evolved technology that continuously promising new features. Moreover, social networks services recently become widely popular, which most people in the world become a social-network-fond. In addition to the revolution of the evolved technology and social networks services, ubiquitousness is taking significant part in our daily lives. Although, there are many e-learning systems already existed, which use Internet technology along with a Web technology to provide education in various ways, in despite of that, there is no such existing system exploits the usefulness of smart devices along with the legacy of the online social networks besides the power of the ubiquitous computing technology. Therefore, we propose a smart device application, which fills the gap that has been missing in the recent contemporary era. It is an application that runs on smart devices particularly Smartphone devices; we call our system "Smart Device based Social E-learning System (SDES)". We have preliminary implemented our system on Android OS. In this paper, we intentionally propose the system in order to ease the way people learn, to provide interactive accessibility in our system, and to utilize the advanced technology more wisely.

Index Terms— Smart Devices, E-learning, Social Network, Ubiquitousness.

I. INTRODUCTION

Recently, science and technology have widely emerged in many disciplines and gradually extended beyond human basic needs and expectation. Mobile technology appears recently more robust. It is collectively used to describe many types of mobile communication, which effectively serves human for many aspects and purposes. With rapid improvement of smart devices, developers has aimed to increase features of smart devices that making it as Pocket PC, which can offer the user variety of services and ease of accessibility and usability. Smartphone is a mobile phone that offers more advanced computing ability and

connectivity than a contemporary basic feature phone. Fundamentally, variety of smart devices can be used with astonished outcomes employing the technology from many technological resources. The advanced capabilities of smart devices increase gradually the use of data hungry application to new resources. With rapid and explosive increase of smart devices such as tablet PC, Smartphone, and smart TV, they have very big significant impact on human daily basis more and more. Mobile devices have been enlarged based on wired and wireless mobile communication technologies and become one of the significant elements, which can bring many facilities and services. Furthermore, smart devices' capabilities may have sophisticated challenges in term of configuration and connectivity. In order to effectively use smart devices widely, we need to find out a way to allow smart devices wirelessly connected. To do so, we need a communication platform that allows smart devices wirelessly connected. Therefore, introducing ubiquitous computing into smart devices increases the demand and the usability of the smart devices. So, ubiquitous computing has a solid and robust role in smart devices. From a communication perspective, in order to use ubiquitous computing more efficiently, ubiquitous computing needs to be flexible and scalable. In other words, ubiquitousness is the state of being anywhere at any time. In the recent decade, ubiquitous technology has grown rapidly to provide effective services and good quality of connectivity. It becomes widespread, which majority of the countries has implemented the ubiquitous technology.

We propose our system to use the profusion of multi-general purpose digital devices, which we inhabit increasingly a digital environment. The notion of using smart devices in learning is not widely appeared along with social networks. Internet technology is recently provided excellent accessibility to people to keep abreast with latest world news and to keep people also up-to-date in the era of the evolved technology. Furthermore, Many E-learning systems are available on the Web, which offer spectacular learning environments to the learners in [1]. E-learning is the way people learn from online resources that has been collected and gathered by the editors in order to provide easy way of learning. Many people intend to obtain their education qualification from online-based learning environments. In other words, people want to obtain knowledge while

they are at home, so that they can enjoy the learning while sitting on chair. With E-learning method, learner can benefit vast array of knowledge. To obtain online degree is becoming easy for many people. In the recent decade, it is a rapid area that can get acceptance and approval for all career types and education objectives. E-learning can take place in diverse areas. For instance, it can highly assist in compliance training of organization's staff, which it can effectively develop their training knowledge and they can easily adapt to new knowledge and process it in a simple way of learning. From a learner point of view, E-learning is a way that allows learner to save many human's resources such as money, time, etc. Furthermore, many E-learning environments and organization have achieved significant savings. On the other hands, E-learning can cover a large number of people in a short period of time. Travel times and travelling expenses for participants and trainers can be significantly reduced and/or eliminated, particularly in geographically disbursed organizations. Although, E-learning is getting attention from many peoples, which they are carving to learn through Web learning environments and they classically become drown in such a way that increase their knowledge and obtain qualification that enable them to get their objective career without consuming much of the human resources. Despite that, online social networking services has significant role in learning in variety of ways such as attraction, accessibility, availability, privacy, benefits, etc. Online social network can be used as a tool, which users or learners can learn and increase their knowledge. Basically, in online social networks great ideas fly from different user, where plenty of users come from different background of thinking. From online social networks perspective, user can befriend and interact with others and have some knowledge in regarding to culture knowledge, technological knowledge, political knowledge, and so on.

The combination of the available technological resources; social network services, smart devices, and ubiquitousness technology, we can create a fabulous and interactive way of learning environments for the learners. Therefore, our system has taken its technical pace to use those advanced technological resources to enhance learning environments that can be accessed anywhere and anytime. Our system is currently using embedded videos from variety of servers such as YouTube, Google Video etc. we plan to have our own server in order to provide learners a massive learning resource, which can allow them to access and benefit them in their daily learning process.

II. RELATED WORK

In the recent contemporary era, the use of software in mobile technology has amazingly increased in diverse areas and sectors, and moreover, it is already evident in familiar objects: car control systems and mobile telephones and so on. On the other hands, a smart device has been widespread in its distinguishable capabilities and connectivity. Variety of smart devices has been manufactured to represent something and to perform specific task in different disciplines such as: E-health, transportation, communications, and so on. Each and every smart device performs different tasks according to its capability and connectivity. For instance, Smartphone devices perform extraordinary tasks in term of communication that basic phones do not do. Therefore, Smartphone devices have to be used wisely in different areas, where it can benefit the user effectively. Many of smart devices are used to assist and automate more of human tasks and activities. Moreover, we inhabit in the evolved digital environments that many digital devices have emerged to enrich human social interaction.

Nowadays, smart devices mushroom to fulfill human necessities and to perform extraordinary task that human cannot do. One good example of using smart devices is, in eHealth sector. John Fulcher [2] was conducted a research on the use of smart devices in eHealth, his research was effectively resulted   from a field trial involving the use of USB iKeys as a secure access mechanism for remote access of patient medical records from a central server are reported. Smart devices have been studied and analyzed from many aspects, size, dimensions, multimedia contents, Web ads, and so on [3].

Online social networks are human activities that ride on technical communication infrastructures of wires and chips. When social communication through the Internet becomes widespread, people formed support groups and political coalitions online. Many new online social networks form of the last decade of the old century grew from the rapidly advanced Internet capability for diverse of social communication such as peer-to-peer communication. Social networks amazingly enhance everyday and get popular in many countries. As mentioned before, many people become online social network fond. For instance, Facebook is one of the most popular social networks. Participation in social networking sites has dramatically increased in recent years. Services such as Friendster, Tribe, or Facebook allow millions of individuals to create online profiles and share personal information with vast networks of friends - and, often, unknown numbers of strangers. On other hands, online social networks site rapidly attracting attention academic and industry researcher. Furthermore, social networks sites provide rich sources of naturalistic behavioral data. Ralph Gross, Alessandro Acquisti has done valuable research that investigated the quantity of users that participate in online social networks and how information of the

participant flows in [3]. They also analyzed the online behavior of social network participants. Most importantly is that, we can use the role of online social networks in education that can enrich the learner knowledge by interacting with different learner from a different points and ideas.

Today, E-learning has mushroomed more quickly on the Web that enables learners to get education with low-cost and in more interactive way of learning environments. E-learning is electronically a continuous development of knowledge or skills for building competence. The use of network technology to deliver training is the latest trend in the training and development industry and has been heralded as the E-learning revolution. In comparison with traditional face-to-face classroom learning that centers on instructors who have control over class content and learning process, e-learning offers a learner-centered, self paced learning environment. Moreover, E-learning is a use of Internet technologies to enhance knowledge and performance more than that it appears to be as effective as the traditional instructor-led methods such as lecturers. Many people think E-learning is a replacement of tradition education, however, it is considered as the complement of the traditional instructor-led method. As pointed out by previous studies that E-learning is effective from student point of view [5].

III. SYSTEM CONFIGURATION AND COMPATIBILITY

System configuration is always the most challenge part of building any application. Therefore our system has its niche compatibility and configuration. The system is implemented based on international standard dimension [6, 7, 8]. We have analyzed the dimensionality of our system features. We set up our system according to familiar standard, which suits smart devices such as smart TV, smart phones, and tablets. Managing the configuration of any systems today is a difficult task. Users or administrators of smart devices can be easily prone to make a simple mistake or lapse and misconfigure a system, causing instabilities, unexpected behavior, and general unreliability. Bugs in software that changes these configurations, such as installers, only worsen the situation. A self-managing configuration system should be continuously monitoring itself for invalid settings, preventing the bugs from harming the system. Since our system preliminary implemented on Android OS, we have set the dimensionality and configuration of system features based on Android OS. Therefore, our system is a self-configuration system that can be smoothly installed and it handles itself from such bugs. Table 1 illustrates the configuration of our system.

TABLE 1
SYSTEM CONFIGURATION, FEATURES, AND COMPATIBILITY.

Device Features	Android
Video	a. Multimedia content is provided b. Dimension =323 x 141 pixels c. Content is embedded from online different academic servers (YouTube) d. Played according to learner's choice
Text Description	a. Details the multimedia contents b. Dimension=180 x 141 pixels
Social Network services	a. Integrated online social network services (Facebook, Twitter,etc) b. Dimension= 180 x 207 pixels
Assessment	a. Assess learner understanding and capability according to the topic b. Display assessment result c. Assessment differs according to the selected topic
Reading materials	a. Reading material is provided to enrich the learner understanding b. Materials are displayed as images c. Materials can be synchronized with video contents according to the learner's need d. Materials differ from topic to topics e. Materials can be downloaded as images f. Dimension=323 x 120 pixels
Configuration	a. Easy to configure the system (self-configuration) b. Compatible with other Smart device's OS

IV. SMART DEVICES SOCIAL E-LEARNING SYSTEM (SDES)

One of the enduring issue, many people may wonder why we propose Smart Device Based Social E-learning System (SDES) is especially worthy of using it as learning tools instead of the traditional education and existing E-learning. First of all, SDES is not as a replacement for the traditional method but as an aid or complement for instructor-led method for the young generation to get educated and to simplify the way people learn. Since Smartphones have many technological capabilities which suit many developers and users' needs and capabilities, we decide to exploit those capabilities in order to bring an interactive way of learning. Furthermore, since young generations become mobile-oriented, this system will have its particular and convenient way of learning. The proposed system is consisting of video streaming, comments, online chat box, and integrated with Facebook, Twitter, and other social networking services. They all work along with each other. In our system, the user needs to select any particular subjects

and choose the desirable videos to learn combined with online chat, comments on the lecturers and so on. As pointed out previously, there are major advantage of utilizing the benefits of the social networks and the smart devices capabilities. In Figure 1, we show the overview architecture of our system.
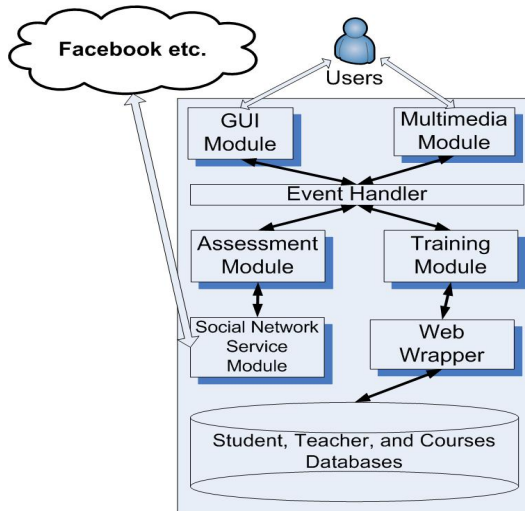

Fig. 1. Overview of System architecture

Fig. 1 depicts the system architecture that contains variety of modules, we have implemented in our system. In fact, each and every module presents information or services according to the system configurations, capabilities, and user's choices. For example, Graphical User Interface Module (GUI) plays major role the system accessibility and interactivity, which is the tool that requires mental and physical activities of human once being interacted in the system.

V. OVERVIEW OF THE SYSTEM

We initially designed and developed the proposed system on Android OS platform, which is popular in recent years. We implemented the system to be downloadable and easy to install. It is clearly used to bring to the users different ideas and understanding of the theoretical and scientific ideas. On the other hands, editors or lecturers will have an easy way of delivering, in other words, conveying knowledge to the learners so that the delivery can be satisfactorily understood and captured. Second of all, we expect the implementation of SDES can incredibly aid disable and paralyzed human in learning while at home. The implemented system will have ease of usability, reliability, and flexibility in the interaction. We implement the system so people can find a simple path to learn, listen, chat, and write up comments, and so on. Fig 2 is a screenshot of the implemented system on Android Os.

Fig. 2. Smart Device based Social E-learning System

VI. SYSTEM FEATURES

Since our system can basically run smoothly on smart devices. Below are the features of our system that has been implemented on Androids OS:

1) Video: There are sufficient amount of lectures that learners can access anywhere at any time. Learners will have the choice to play the streaming video according to their desires. Other than that, learner can jump to a particular slide that is provided in the system.

2) Text Description: Text is provided to inform the learners about the topic that are being viewed and played.

3) Slide Notes: Slides notes are provided in order for the learner to synchronize with the video lecture and to refer to beside listening and watching the video.

4) Social network Services: Our system is using the online social network legacy that enables the learner to share ideas and thoughts with other learners. It is a blessing for learners to exchange ideas among others, so basically learners will enrich their knowledge and clarify ambiguity.

5) Leaner Assessment: Learner can rewind the video as many times as they desire, beside that, learner will have assessment feature that enables the learners or teachers to evaluate learners. Assessment will be related to the topic learners selected.

VII. CONCLUSION

In this paper, major explanation was focusing on the importance of the current evolved technology that mushroom in diverse aspects and sectors. The main point of this paper is, to use the current technology in a place where it can bring variety of joys in different sectors. SDES is system that has its place in the current technology and it is implemented on android OS. We have explained the importance of our system; the system can be as a complement for the traditional education, which

many people are used to. In fact, SDES uses the advantages of the online social network services and unbiquitouness technology to convey interesting way of learning at anytime and anywhere. SDES has it niche compatibility and ease of accessibility to expert and novice users. Further work will be implemented on smart TV and smart tablets.

ACKNONWLEDGMENT

REFERENCES

[1] Khan Academy "Online academic Environmens". " www.khanacademy.org/"
[2] Professor John FULCHER," The Use of Smart Devices in eHealth", Australia.
[3] Ralph , Alessandro Acquisti, "Information Revelation and Privacy in Online Social Networks", Pittsburgh.
[4] danah m. boyd, Nicole B. Ellison "Social Network Sites: Definition, History, and Scholarship, USA.
[5] Ruiz,Jorge,Mintzer,Michael,"The Impact of E-learning in Medical Education",March 2006.
[6] Mobile Marketing Association," mobile advertising guidelines", september 2009.
[7] Mobile Marketing Association "MMA Global Mobile Advertising Guidelines",
[8] Australia Interactive Media Industry Association," AIMIA Mobile Advertising Guidelines 2009", Australia.

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