

Employing Smart Education in Mobile Devices Using Voice Interface

P. Danavanthani
Assistant Professor
SMVEC

K. Abishek
Final Year I.T
SMVEC

R. Kovendan
Final Year I.T
SMVEC

M. Manivanan
Final Year I.T
SMVEC

Abstract -This paper explores the utilization of “pervasive” or “ubiquitous” computing devices in higher education classroom for the future. As ubiquitous devices which are mostly portable are used commonly these days an idea on the implementation of these devices such as PDA’s, tablets, smart phones etc., for higher education is presented. Smart class rooms are widened in the field of education now-a-days, but an effective application system that makes the mobile devices for educative purpose can be implemented. Our work gives an extra educative experience on mobile devices implementing education system on those devices. In the following, we give an overview of how an ubiquitous device is employed in educative technology for smart education purpose. Interviews with experts made us give proposals on the utilization of the advantages of ubiquitous computing technology in the higher education classroom.

Keywords: Ubiquitous Computing, Higher education, Classrooms.

1. INTRODUCTION

Mobile computing has become a vast area as users are more and more concerned on smart phones, tablets, PDA’s etc. As the interests in mobile computing is growing more and more, these devices can be used effectively for the implementation of educative system.

Mobile computing is a versatile technology and strategic technology that increases information quality and accessibility, enhances operational efficiency and improves management efficiency. As the need of an effective education system is necessary and also with the improvement in technology, this application covers the abstract view.

Our work also projects on the young minds, business attractions and also most people found of technology for improving the accent of their education. With the development of technology, new roads have been opened in education. An interesting idea is to use computers in teaching and learning procedure. Students will have the opportunity to gain access to information resources in a timeless and limitless way. Teachers will be able to transform their classes into a student-centered environment avoiding the drawback of traditional teacher-centered education system.

Researches have given positive impacts on ubiquitous learning. This work relates the advantage and disadvantage of ubiquitous learning environment fully examined and verified. This application will make the teacher-student centered education system with a well adopted user interface and the needed. Finally, an education

system that makes the students interesting will be delivered at the application context in the android system. This application system is basically concentrated on the mobile devices and thus it is focused on the android platform. The following are the various reasons for adopting this project work:

1.1 Student Centric view of approach

This approach makes the education system in a Student centric view, thus making it an interactive system application. Almost, all types of students are made use of this approach.

1.2 An approach for the Visually Blind

The application is designed in a way that its opened to all the users, both normal and visually challenged. By this context each and every student (considering visually challenged) may use this application for their education irrespective of the physical abilities.

1.3 Voice Interfaced System

As this application is designed for all types of students, its fully based on a voice interfaced system. Each and every module is voice control interfaced for the blind users and normal users to get the regular interface. This makes the system to get used by all types of students and to get a independent and same platform educative system for everyone. This might help in the evolution of a strengthened education system in the student centric points.

1.4 Quality and costs

Our application is a qualitative and a quantitative one which makes the students to get the preferred type of education from the home place of accessing the application themselves. As in today’s scenario, education has become very costly. But our application delivers education at the doorsteps of students with lower costs and higher quality.

2. RELATED WORKS

In the paper work on PecS, it has been stated that pervasive and mobile computing technologies may be used in adaptive and remote applications^[1]. Thereby, porting this idea to use mobile computing technologies to enhance remote applications is the concluded idea from this work.

As of mentioned in our next search paper, new technologies have been brought in many changes in teaching, and of course in learning. Traditional classrooms are being transformed in order to utilize the advantages of the technology. Ubiquitous computing is about distributed computing devices in the environment, with which users are able to gain access to information resources^[2].

According to the work on Ubiquitous learning, researches give the implementation of learning between student and of service provider in u-space, which is not limited to traditional e-learning system.^[3]

Smart phones have been popularized now-a-days. This enhancement in mobile technology has made the users to go on creative in mobile phones. Over 20 million Android devices are on work day to day. So, processing an application in the Android platform will make the android users to use the application efficiently with its full needs.^[4] Thus, finally we relate the work to an extensive voice interfaced system for higher education that may be applicable to all users(including visually challenged).

3. PROPOSED WORK

Smart education system present now-a-days are of some limitations that makes them a tedious system to introduce into the institutions. Thus, overcoming the limitations of the traditional smart education system and also the traditional teaching system, we propose a system that is voice interfaced and avoids most of the limitations of the existing system.

There may be lots of smart educative systems to offer e-learning for students, but our system provides and interactive combination of the m-learning and the e-learning technology that attracts most of the students.

The proposed system provides a voice interfaced system that helps the visually challenged people to use the system effectively. This makes the system more effective than the normal application as it may be used by every student irrespective of their challenges.

To avoid intellectual property issues, we are using open source code examples and student applications. Although we used open source licenses, we retained copyright of all code that was produced.

Here the user is allowed to access three types of education system that provides different materials on the specified topics. The application is portable and the syllabus may be loaded in the SQLite database.

For the database point of view, we use the SQLite structure for the storage of student and teacher details, syllabus for the various subjects and their contents.

The proposed work of our system contains the following modules:

- Registration
- E-scheduling
- Updater
- Voice Enabler

3.1 Registration

This module is the opening intent of the application. This activity gives the options for the user registration on the application context. This classifies the user into three types of learners according to which they are divided with the information stored in the database. The following are the three types of learners:

- Slow learners
- Medium learners
- Fast learners

The users are allowed to register for more than one learner but only one at a particular point of time.

3.2 E-scheduling

The schedule module is used to schedule the syllabus which is going to be used by the users for doing scheduling on the lessons that are going to be taken by the users at the specific period of time. By doing so, the application gives an alarm that gives the timing of the scheduled syllabus for the day by the user priority to the time.

3.3 Updater

The updater module is designed in such a way that the current trend and technologies going on today's world will be updated to the users. Most of the trends and technologies goes unknown to the students, thus this module has been set up to know the current day-to-day trends.

3.4 Voice Enabler

This is a special module that may or may not be used by the normal users, but compulsorily used by the visually challenged students. This option gives the voice interfaced application that helps the users to interact with the system. The Text-to-Speech recognition and Speech-to-Text recognition of the android platform is used to build this module of the system.

4. DATABASE

For the database connectivity, we use the SQLite database where the users store their details and also the storage from the administrator point of view is done. The storage are parsed by the query i.e. the basic sql query.

5. ARCHITECTURE OF THE SYSTEM

The architecture of the system is based on the above mentioned criterion. This makes the system effective on the approaching point of view. The database is connected to both the users and also the administrator who feeds on the syllabus in the database. The input parser and the output parser are the is by means of a mobile android device preferably an android smart phone.

The following is the architecture diagram of our system:

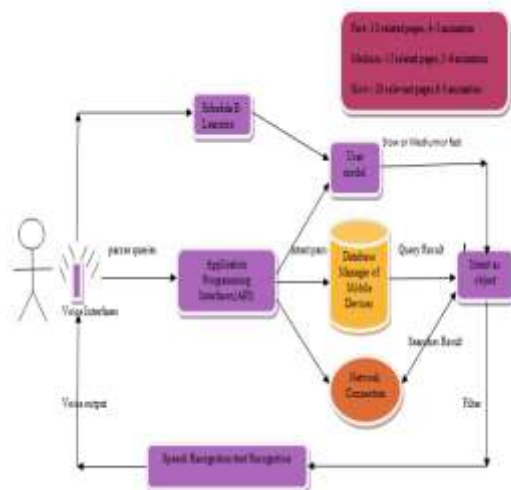


Fig (a) Architecture Diagram

As on the above architecture, the input is given by means of a mobile device and the output is driven by means of a mobile device itself. The Text-to-Speech recognition and Speech recognition classes of the android platforms helps in parsing the voice inputs of the system.

Normal inputs are also given by the use of the touch interface. Next the input is parsed through and intent and reaches the database to fetch the requirements of the users.

Before retrieving the information from the database the user models are checked. The user specifications are checked and then the relevant information is fetched.

The output is both in the form of a normal text vision and also in the form of a voice output. Finally, the user gets the intensive requirement in the field of e-learning.

6. CONCLUSION

We have presented a novel approach to use mobile technologies in an efficient and adaptive manner. This enables the users (students) to have an interactive approach instead of the traditional approach on learning.

7. REFERENCES

1. Cook, D.J., & Das, S.K. (2012). Pervasive computing at scale: Transforming the state of the art. *Pervasive and Mobile Computing*, 8(1), 22 – 35.
2. Kolomvatsos, K. (2007). Ubiquitous computing Applications in Education. In M. Lytras & A. Naeve (Eds.) , *Ubiquitous and Pervasive Knowledge and Learning Management: Semantics, Social Networking and New Media to Their Full Potential*. (pp 94 – 117). IGI Global.
3. Sung, J-S. (2009). U-Learning Model Design Based on Ubiquitous Environment, *International Journal of Advanced Science and Technology*, 13, 77 – 88.
4. Ubiquitous.Computing.Applications.in .Education Kostas Kolomvatsos, National & Kapodistrian University of Athens, Greece.
5. J. White et al., "R&D Challenges and Solutions for Mobile Cyber-Physical Applications and Supporting Internet Services," *J. Internet Services and Applications*, vol. 1, no. 1, May 2010, pp. 45–56.
6. H. Erdogmus, "Cloud Computing: Does Nirvana Hide Behind the Nebula?" *IEEE Software*, vol. 26, no. 2, 2009, pp. 4–6.
7. D.C. Schmidt et al., *Pattern-Oriented Software Architecture: Patterns for Concurrent and Networked Objects*, vol. 2, John Wiley & Sons, 2000.

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