Chapter 8
An Augmented–Reality–Based Intelligent Mobile Application for Open Computer Education

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ABSTRACT

Objective of this chapter is to introduce an Augmented Reality based intelligent mobile application (M-Learning application) to support courses of Computer Education. In the study, it was aimed to provide an alternative way of improving M-Learning experiences by employing both Augmented Reality and Artificial Intelligence based approaches in a common environment. Briefly, the application is able to use an intelligent mechanism evaluating students' several dynamic learning parameters to match them with the most appropriate course materials provided over the system. So, each student can encounter with appropriate course materials matching with their states over the application system. The related course materials include both AR based ones and standard ones as uploaded by teachers. An evaluation based flow has been run in the study by using the developed application through courses of Computer Education and the obtained results have shown that the application is effective and successful enough at improving students' learning experiences and achieving a good Open Computer Education.

INTRODUCTION

Because of needs appeared as a result of transformation of the society, there has been a remarkable interest in developing computer and communication oriented technologies to overcome the issue of gathering the desired information, revising it and even sharing it. As a result, many different technological approaches, methods, and techniques have appeared in order to adapt individuals to the new society and the new 'brave world'. It is clear that computer and communication oriented technologies have a great role on the whole changes, improvements, and developments so far and will continue to shape the future.

When the use of computer and communication oriented technologies in the modern life is considered, developments within both hardware and software sides of the computer technology should be discussed

and enough consideration should be given to the revolutionary communication technology called as Internet. Today, Internet and the Web as its logical side for the users have a remarkable role on providing more digital and practical ways of works in almost all fields. Among all different fields, education has a remarkable value because it has a great potential to benefit from the latest technologies and determining future states of the technologies to make education better and better.

Today's education field is associated with highly use of both computer and communication oriented technologies. Especially since the first introduction of distance education, taking part in educational process whenever and wherever individuals want has been a popular trend to be adapted to the rapidly changing life and fast information flow thanks to advantages of the digital world. In time, the approach of distance education has caused more advanced technological techniques like E-Learning. As a result of increasing use of especially mobile technologies, today's E-Learning applications are based on mostly Mobile Learning (M-Learning) technique. Thanks to also rapid developments experienced in mobile software and hardware technologies, it is now possible for every individual to use their own mobile phones in order to join to M-Learning based applications provided by educational institutions.

As like many other educational technologies, M-Learning also has been improved in time and still there is a remarkable effort in the associated literature to achieve better M-Learning experiences. At this point, it has been a popular approach to support M-Learning with different scientific methods to improve outputs of typical M-Learning processes. In the associated literature, it can be observed that researchers are in an effort of making M-Learning applications more effective and efficient. In this context, use of 'intelligent' components to improve using features and functions of M-Learning tools is one of the most popular research interest that researchers focus on. Because of multidisciplinary nature of Artificial Intelligence, it has been widely used to achieve intelligent software systems. So, M-Learning has become an important research field in which Artificial Intelligence based approaches, methods, and techniques are widely employed to improve everything in an educational manner. On the other hand, it has also been an important research interest to enable individuals to keep their interaction with the real-world alive while they are using a computer based educational tool. So, technological approaches like Augmented Reality, which allows mixing both virtual and real world, have been started to be used widely in different kinds of mobile applications. Here, M-Learning supported with Augmented Reality has gained popularity in a short time and the associated literature has received many research works focused on this solution way. If it can be thought further about improving such applications of Augmented Reality supported M-Learning, use of Artificial Intelligence is still one of the best choice leading to developments of educational tools of the future.

Objective of this chapter is to introduce an Augmented Reality based intelligent mobile application (in other words, M-Learning application) to support courses of Computer Education. As it was just indicated at the end of the last paragraph, it is a great way of improving M-Learning experiences by employing both Augmented Reality and Artificial Intelligence based approaches in a common environment. So, the study explained here has included design and development of such mobile application. Furthermore, the study has run also an evaluation based flow by using the developed application through courses of Computer Education. Briefly, the mobile application introduced in this chapter has a remarkable potential to improve learning experiences by combining the latest scientific technologies and approaches together and allows readers to have enough idea which step that the associated literature has just arrived to. At this point, the application is able to use an intelligent mechanism, which evaluates students' several dynamic learning parameters to match them with the most appropriate course materials provided over the system. So, each student can encounter with appropriate course materials matching with their states

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