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AR Teaching Using QR Code

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Students, Computer, GGSP, Nashik, Nashik[1,2,3,4]

Abstract: In this paper, we present an Augmented Reality (AR) system using Quick Responsible (QR) code for Android Smartphone. QR code has many advantages to be a marker. It can encode relatively larger amount of marker information in an easy and standard way, also it has the capability of error correction. Basically the system detects the marker, decodes its information and overlays a 3D object on the marker. As QR code is widely used today, our idea of combining QR code and AR to develop an application in handheld smart device can extends to many fields.This research focuses on the use of Quick Response (QR) codes, as a part of the Augmented Reality (AR) technology, in an educational intervention for early childhood education in Music. The educational methods employed are game-based and collaborative learning within a framework that uses Information and Communication Technologies (ICT) and mobile devices in indoors and outdoors activities.

Keywords:(AR) Augmented Reality,QR(Quick Response) code, Learning Outcomes.

INTRODUCTION

Augmented Reality(AR) is a concept to integrating virtual information to a real-world environment. According to different tracking technology, AR systems can be group ideas two general types. One is Geographical Information System (GIS) using GPS data and solid state compasses; the other one is using image recognition. GIS-based AR system needs accurate location information. However, so far, even though GPS data is able to handle the range of meters, it's not good enough in many cases. Using image recognition technology to develop AR system is very popular these days. This vision-based system also has two sub types, maker-based AR and maker-less-based AR. Without doubt maker-based AR is more mature, but also it needs more computation and memory.Recently Quick Response (QR) code is a popular way for encoding information due to its fast readability and comparatively large capacity. These advantages also make QR code a good marker. And since it is widely used in many fields,we may extend our application to different areas with different usages.Lately Mobile Augmented Reality (MAR) has made a great progress thanks to the development of some handheld smart devices, such as Smartphone. Smartphone with integration of camera, general-purpose processors and sensors is a suitable platform for AR. In our proposed system, we used QR code and planted the application to Android Smartphone.

MOTIVATION &PROBLEM STATEMENT

To develop a project Augmented Reality (AR) system using Quick Responsible (QR) code for Android Smart phone for developing a positive attitude towards technology as an integral part of modern education.

LITERATURE SURVEY

Augmented reality, commonly referred to as AR has garnered significant attention in recent years. This terminology has been used to describe the technology behind the expansion or intensification of the real world. To "augment reality" is to "intensify" or "expand" reality itself. Specifically, AR is the ability to superimpose digital media on the real world through the screen of a device such as a personal computer or a smart phone, to create and show users a world full of information which has not been possible to conceptualize until now.

1) Heilig designed a Sensorama, to 1968 when Sutherland developed an AR system called "The Sword of Damocles" that used optical see-through head-mounted display that is tracked by one of two different 6 Degrees of Freedom (DOF) trackers.

2) In 1990, Tom Caudell , a Boeing researcher coined the term Augmented Reality to refer to overlaying computer-presented material on top of the real world, Möhring et al demonstrated for the first time that AR can be supported on mobile devices. The work used 3- dimensional markers to track real world objects with simple computer vision methods

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SYSTEM ARCHITECTURE

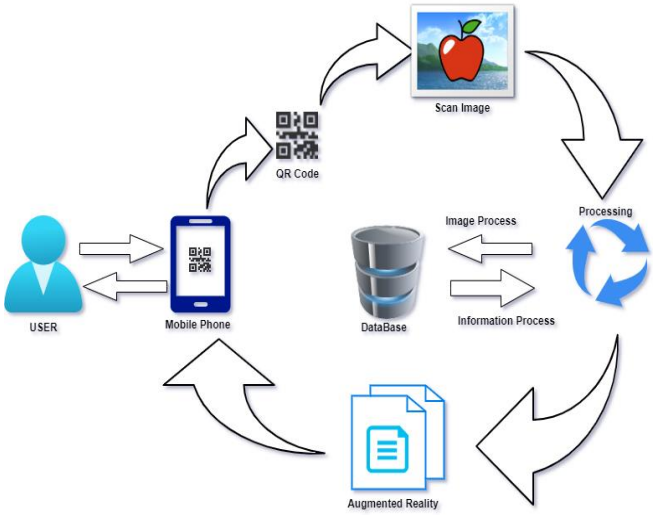

Fig: System Architecture

Users with a camera phone equipped with a QR code reader application and Internet connection can scan QR codes to display text, Image or perform some other similar action

System Necessity

Hardware:

1. Smart Phone
2. Processor: Intel i3
3. RAM: 8 GB
4. Hard Disk: 500 GB

Software:

1. IDE: Android studio v2.3.3
2. Programming Language: Java, XML

Advantage:

1) Smart Education
2) Easy Understanding
3) Portability
4) Time-Saving
5) Preventing Paper Wastage

CONCLUSION

We designed and implemented an AR system using QR code for Android Smartphone. An experimental study on the feasibility and efficiency of AR technology (QR codes) and mobile devices as learning tools for the preschool and Kindergarten ages is presented. In conclusion, results indicate that the QR codes and the mobile devices may be efficiently employed in preschool and Kindergarten ages as learning tools; they show a significant potential for improving learning outcomes, for cultivating collaboration skills and for developing a positive attitude towards technology as an integral part of modern education.

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