Chapter 37
Know Your World Better:
Cloud Based Augmented Reality Android Application

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ABSTRACT

Mobile devices are changing the way people live. Users have everything on their fingertips and to support them, there are scores of application which add to the usability and comfort. "Know your world better" is an Augmented Reality application developed for Android. This application helps the user to find friends and locate places in close proximity. In this paper we talk about an application that describes a method of augmenting Point of Interests (POI's) on a mobile device. User has to move his phone pointing in a direction of his choice and POI's if any are shown in real time. The user's interest with respect to the environment is inferred from speech or by selecting from the choices; this data is used for information retrieval from the cloud. The result of context-sensitive information retrieval is augmented onto the view of the mobile and provides speech output.

1. INTRODUCTION

"As smart phones explode in popularity, augmented reality is starting to move from novelty to utility" (Azuma et al., 2001). These words by Rachel Metz explain the importance of augmented reality in the present world. The aging of digital world can be categorized in three ways – Real world, Virtual world and augmented world. Real world is the place where we live in; we feel the surroundings as they are. Reality lies in the eyes of the beholder when it comes to real world. Virtual world is experiencing an imaginary world. This imaginary world is created by computer simulated environment. Few concepts by

DOI: 10.4018/978-1-5225-5469-1.ch037

which we can implement virtual reality are – full-body immersion, telepresence, interaction, artificiality, immersion, simulation, and network communication. Some implementations of virtual reality include telepresence, telexistence, virtual artifact, etc.

Augmented reality is in-between real world and virtual world that allows computer to overlay physical objects in real-time against the computer generated virtual imaginary world. A common accepted definition of augmented reality is it combines real and virtual imaginary world, interactive in real time and registers the virtual imaginary world with real world (Azuma, 1997). A commonly accepted definition of AR as a technology which (1) combines real and virtual imagery, (2) is interactive in real time, and (3) registers the virtual imagery with the real world. Augmented reality provides a way to query and extract profuse information that is associated with the real world objects that can be related to their locations. The concept of Augmented Reality (AR) was first mentioned by L. Frank Baum in 1901 (Akula et al., 2011) in his story The Master Key (Milgram, Takemura, Utsumi, & Kishino, 1994). Tom Caudell coined the term "Augmented Reality" in 1990 when he was working at Boeing on a project to make it easier to assemble large bundles of electric wire for aircraft on the factory floor.

In virtual world we used to immerse people in an artificially created world, the goal of augmented reality is to augment objects in the physical world by enhancing them with a wealth of digital information and communication capabilities. Augmented reality provides a way to query and extract profuse information that is associated with the real world objects that can be related to their locations. As shown in Figure 1, we gather location data from the phone's sensors and provide an "augmented location-based social experience."

Location Based Services (LBS) are used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life, etc. It includes services to identify a location of a person or object, such as discovering the nearest banking cash machine or the whereabouts of a friend or employee, parcel tracking, vehicle tracking services, mobile commerce when taking the form of coupons or advertising directed at customers based on their current location, personalized weather services.

A LBS requires five basic components: the service provider's software application, a mobile network to transmit data and requests for service, a content provider to supply the end user with geo-specific

Figure 1. Location based service