

Chapter 14

Blending Augmented Reality with Real World Scenarios Using Mobile Devices

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ABSTRACT

In this work, the authors present methods that add value to the current Web by connecting administrators of a space such as a city with its visitors. The mobile device has nowadays become an important tool in the hands of visitors of cities and the authors present it as a gateway for the administrators to their visitors. The authors present a method that processes various environmental factors during a visit and uses these factors as a context for presenting the recommendations. In this work, the authors also propose a method that can measure queues in a city, and by knowing the overall picture of the situation, it provides individual recommendations of separate mobile devices accordingly. This chapter shows, therefore, the three main steps in the process of recommendation systems: collecting information, processing the recommendations, and presenting them in an attractive way. In this case the authors focus on presenting recommendations through augmented reality in order to provide an attractive tool for end users, which would, at the end of the day, connect them further to the city over the Internet.

INTRODUCTION

Recent development in mobile wireless networks allowed for a more effective and easy way for users to connect to the internet from their mobile device from practically everywhere. In this chapter we are presenting a technique which takes advantage of this internet development in order to connect end users on a mobile device with the administration of the place they are visiting. This adds value to the internet because it makes use of all the advantages of using a mobile device (localisation, Augmented Reality and so on) and utilises the same device to act as a portal for quality information provided in that space. Besides this, the proposed technique allows the users to additionally connect to the web in order to acquire further information.

Mobile applications are always becoming more diverse, particularly with the improvement in development environments and the respective distribution of these development tools. Nevertheless, there is still the need for carefully built applications which carefully study the needs of the users. In this chapter we will explore a system which can be adopted as a mobile application which assists a visitor in any city hosting this system.

The first section of this chapter will study the problem faced by tourists when visiting a city. This will follow towards the study of these problems and what tourists normally do to overcome these problems. Subsequently a brief technical overview of Augmented Reality will be explored in the context of using this technology on a mobile device. The second section would then bring the problems to a lower level of abstraction and explores solutions while proposing a high level design of such a hybrid system. After the design is presented, different applications of augmented reality in this context together with details about the queue solution technique are given.

The aim of this chapter is to present an overview of the problems and how they are tackled by different solutions, starting at an abstract level

towards the design of the system and employment of mobile technology to tackle these problems.

By making use of such a technique, it is believed that more value is added to the current web. Such a technique takes advantage of the openings provided by the emergence of the Web 2.0 by allowing the end users to be co-producers of information. This technique allows the users to contribute to the information source through their mobile device by making use of the context provided by this application.

Background

This section studies the need of an end user in a space. This study is important because it gives a deeper understanding of what users need and subconsciously expect out of an information source which in the case of this application is the internet connecting them to the web and to the source provided by administration.

Going around a City

This section will explore how tourists navigate around a city. Brown and Chalmers explain that while a tourist goes around a city he/she faces some 'problems'. However, they emphasise that one should not tackle these problems in a negative way since they claim that in tourism "getting there is half the fun" (Brown & Chalmers, 2003). Several solutions are subsequently presented, answering the former 'problems'.

Tourist Problems

Brown and Chalmers identified the following problems which tourists face while on holiday:

- **What to do:** This problem tends to seem a clear one. Brown and Chalmers explain that unlike work, there is not a particular or strict goal which must be reached by the end of the holiday. The tourists face a

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