Demonstration: CityViewAR Outdoor AR Visualization

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ABSTRACT

This demonstration shows CityViewAR, a mobile outdoor Augmented Reality (AR) application for providing AR information visualization on a city scale. The CityViewAR application was developed to provide geographical information about the city of Christchurch, which was hit by several major earthquakes in 2010 and 2011. The application provides information about destroyed buildings and historical sites that were affected by the earthquakes. The geo-located content is provided in a number of formats including 2D map views, AR visualization of 3D models of buildings on-site, immersive panorama photographs, and list views.

Categories and Subject Descriptors

H.5.1 [Multimedia Information Systems]: Artificial, augmented, and virtual realities;

General Terms

Human Factors. Mobile Interfaces

Keywords

Augmented Reality, Mobile HCI, Earthquake

THE DEMONSTRATION

On September 4th 2010, a magnitude 7.1 earthquake hit the city of Christchurch in New Zealand and changed it forever. Since that time more than 10,000 aftershocks have damaged the city and over 900 inner city buildings have been demolished. With nearly a third of downtown Christchurch gone it is difficult for people to remember what the city looked like or the important historical landmarks that have vanished.

The CityViewAR application is designed as an outdoor AR information browser application for providing geographical information related to the earthquakes that hit Christchurch. CityViewAR was designed to be able to show large numbers 3D model of buildings in city scale AR visualization, and presenting various types of content including panorama pictures. In addition, our application has a novel interface design which leads to a better user experience for people exploring the city.

As an information browser, the main function of the CityViewAR application is to allow the user to efficiently access geo-located information. The application takes advantage of built-in sensors on smart phones (e.g., GPS, electronic compass and accelerometer) to provide information based on the user's current location. To meet different needs of the users, CityViewAR shows information using different visualization methods, including AR, interactive digital map, and list views. These three views are used as the main interfaces with which user could browse through the content and information provided.

The application is designed to start with the Map view which is more accessible independently from the user's location, yet gives enough geolocational context, and provides a familiar starting point. From the Map view, the user can freely switch into the other browsing views easily using on-screen icons.

While most of user interaction is done with the touch screen interface, motion sensors on the device are also used for user interaction. Besides tracking the viewpoint in the AR view, CityViewAR also provides an interaction method based on the orientation of the device for automatically switching between the AR and map views.

The second author is demonstrating the system. We are encouraging attendees to try the system and to give feedback.