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Objects tracking from natural features in mobile augmented reality

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Abstract

Real world objects are recognized by tracking less and tracking based techniques. Mobile augmented reality browsers are tracking less systems, which acquires location data using global positioning system and provide information in the form of maps or web links. Tracking based techniques recognize objects through markers or directly real world objects without markers. Marker based systems actually track the markers not the real objects and therefore, these approaches hides the reality. Marker-less (direct real object tracking) systems use client-server architecture. However, these are affected by network latency. The Smartphone is capable to recognize and track real world objects without any server and marker. It can guide the users about their location and also provide information in a convenient way. Therefore, an improved algorithm for tracking real world objects through natural features was formulated. The modified version of speed up robust features (SURF) was used for features extraction from live mobile camera image and recognition. The pose matrix from extracted features was calculated by Homography. The adapted algorithm was tested in a mobile AR-prototype application using iPhone. It was found from the results that the formulated algorithm recognized and tracked the real world objects from natural features in speedy, easy and convenient way

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1. Introduction

Augmented reality using emerging technologies such as global positioning system (GPS), accelerometer, gyroscope, compass and mobile vision, provides a best opportunity to Smartphone users to explore their surroundings. The real world objects can be recognized by using marker based and marker-less augmented reality systems. Mostly, the previous developers used markers based augmented reality systems. However, those systems actually hide the reality and it was also difficult to keep the markers everywhere. Furthermore, the previous marker-less approaches use client-server architecture, which is drastically affected by network latency. The markers based augmented reality was applied in different fields like medical visualization, maintenance and repair, navigation and entertainment. However, the markers are not suitable for outdoor mobile augmented reality because markers hide the reality and need to keep everywhere [1]. Its range is also very limited and end-users often don't like them. Marker-less natural features based approach [2], can recognize real world objects, such as sights, buildings, and

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