Graduate School of Science and Technology Master's Thesis Abstract

Laboratory name (Supervisor)	Interactive Media Design (Hirokazu Kato （Professor）)		
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Thesis title	Registration Correction with Guided Marker for Visual SLAM-based Mobile AR Framework		

Abstract

In mobile AR application, it is important to render the AR content on the desired position, which showing on the screen precisely. In case where authoring hundred or thousand AR contents, creating a database of all AR content information and generating its own coordinate system is easier and faster. While using the AR, visual SLAM system also being used to estimate the relative camera pose by inertial information from IMU sensors and visual keyframe features adjustment from camera image capturing. The visual SLAM generally comes with tolerable small error of camera pose estimation, but small accumulated error can affect the position of AR content, where its projection mismatch with the designated position from database. The existing visual SLAM approaches tend to improve the camera pose estimation, yet famous mobile AR frameworks cannot externally modify or change the camera position or orientation. This thesis proposed an alternative solution where focus on AR content object transformation from database-based World coordinate system to the visual SLAM-based coordinate system. Some markers are used to create the relationship of both entities, and also to gather the distortion information of SLAM map. With the saved SLAM map and calculation of registration correction function from markers information, AR content will be transformed correctly and adjust to distorted SLAM map. The evaluation is done by comparing the ground truth position on actual space, and the result of transformation with proposed function.