INTEGRATING GOOGLE STATIC MAPS AND FEATURES DETECTION FOR AR-BASED MOBILE NAVIGATION IN UMS

NAME: FOONG YUK YING

SUPERVISOR: RECHARD LEE

PROGRAM: MATHEMATICS WITH COMPUTER GRAPHICS

ABSTRACT

Augmented Reality based application is widely used in many fields. The system was developed to present an integrated Augmented Reality application with Google Static Maps of University Malaysia Sabah (UMS) in order to find and get the information of the locations in UMS by using android platform. The objectives of this project are to detect the image target as a marker by using feature detection, to integrate Google Static Map with Mobile Augmented Reality for users to detect the locations of UMS, and to develop the Mobile Augmented Reality (MAR) application. This system was built using the Unity3d and SketchUp Pro 2015. The project framework is categorized into research phase and development phase. The method used is Speeded-Up Robust Features (SURF) which detects the features of the target image. Several experiments were conducted to test the performance, efficiency and accuracy of the system which includes distance test, lighting test, degree of orientation test, memory test, network connection test and occlusion test. Based on the results of the experiments conducted, the optimal distance is 25 centimetre, optimal brightness is 798 lux to 805 lux, and the optimal degree of orientation is 90 degree. Furthermore, the efficiency of the system is good when the memory of mobile is large and the condition of the network connection is good. Lastly, the result of occlusion test shows that the performance of the system is good when the feature points of the target image were not covered more than 30 percent.