ACCURATE LOCATION DETECTION SYSTEM FOR AUGMENTED REALITY APPLICATION

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DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for degree or diploma in any other university or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Name: Dr. Indika perera

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ABSTRACT

The proposed research has been done as an extended version of the research named "A Framework for Mixed Reality Application Development: A Case Study on Yapahuwa Archaeological Site" which was done by Amodth Jayawardena. The above research implemented a proper framework for developing augmented reality applications. The researcher has planned to implement a working model of the above project in Yapuhuwa Archaeological site. However, still, there is a problem in implementing this project in real-life situations. That is because of non-accurate location data. Although the technology today has improved, GPS technology still doesn't accurately offer the exact location data. Therefore, when a user tries to use the above-mentioned AR application on his/her mobile, the virtual graphics generated for that location may get inaccurate because of the slight GPS location data fluctuations. However, we can improve the accuracy of the inbuilt GPS data of a mobile phone using third party devices, which are expensive. The proposed solution implemented in this is based on giving a solution to find the most accurate geographic locations for augmented reality applications. Since improving location data accuracy using third party devices is not practical in an implementation environment like Yapahuwa this research paper focused on getting the exact location using image processing technology and mobile phone's sensor data (when needed). An image file system is maintained separately for implementing the system. As an example, when the research is implemented in the real world it can identify and generate the graphic image to the relevant location when a user aims his/her mobile phone to an archaeological place. The technology used in the research can be implemented in many other industries for purposes like Google Maps in the future.

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LIST OF ABBREVIATIONS

Abbreviation	Description
GPS	Global Positioning System
CPU	Central Processing Unit
VT	Vocabulary Tree
DB	Database
SIFT	Scale-invariant feature transform
AR	Augmented Reality
ORB	Oriented FAST and Rotated BRIEF Algorithm
SURF	Speeded up Robust Features Algorithm
FAST	Features from Accelerated and Segments Test