

Specification of Competency Standards
for the Information & Communications Technology Industry
Unit of Competency

Functional Area - Operations Management

Title	Perform location analysis for graphic overlay in AR application
Code	107993L4
Description	This unit of competency applies to all Digital Media Technology (DMT) practitioners who are involved in the development of VR applications. Augmented reality (AR) involves overlaying computer graphics on a video stream of the real world, and location analysis is one of the key tasks in this process. This UoC concerns with the abilities in performing location analysis for graphic overlay in AR application, in the capacity of a developer.
Level	4
Credit	3
Competency	<p>Performance Requirements</p> <p>1. Knowledge for location analysis for graphic overlay in AR application</p> <ul style="list-style-type: none"> • Realize the philosophy and guidelines of the organisation towards AR application development • Master programming knowhow, concepts and techniques • Possess proficient programming skills in areas such as: <ul style="list-style-type: none"> ○ Authoring ○ Engineering ○ Quality testing, etc. • Familiar with languages for AR application development, such as: <ul style="list-style-type: none"> ○ Objective-C ○ Swift ○ Java, SQL, PHP, ASP.net, JSP, etc. • Familiar with tools and techniques for location analysis and location sensing in AR, such as: <ul style="list-style-type: none"> ○ Audio systems ○ Infrared beacons ○ Biosensors ○ The Simultaneous Localization and Mapping (SLAM) techniques, etc. • Keep abreast of the new developments and technological advancements in the ICT industry <p>2. Perform location analysis for graphic overlay in AR application:</p> <ul style="list-style-type: none"> • Work with the application development team to design a solution that meets the requirements of the AR application in concern • Identify areas that involve the performance of location analysis in the process of AR application development, for examples: <ul style="list-style-type: none"> ○ Use inertia and location data to identify the position and orientation of mobile devices with reasonable precision, collected by means of : <ul style="list-style-type: none"> ▪ Accelerometer ▪ Gyroscope ▪ GPS ▪ Wi-Fi ▪ Magnetometer ▪ Barometer, etc. ○ Localize the camera in a map of the environment and find the pose of the camera relative to that map ○ Perform visual tracking with a variety of feature trackers and feature matching algorithms

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	<ul style="list-style-type: none"> ○ Use feature detectors to detect the different types of features, namely : <ul style="list-style-type: none"> ▪ Edges ▪ Corners ▪ Blobs ▪ Patches, etc. ○ Perform feature tracking and motion estimation, with techniques such as : <ul style="list-style-type: none"> ▪ Dense optical flow that involves the matching of every pixel in consecutive image frames ▪ Sparse optical flow that uses only selected features, etc. ● Use gathered information during location analysis for use in graphic overlay ● Conduct the above tasks in an iterative design, testing and development sprints to refine the overall product solution ● Report the progress and results to the development team at appropriate time intervals <p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> ● Always devote fully to all activities related to the performance of location analysis in AR application, and follow all prescribed guidelines and procedures ● Always perform all location analysis tasks in an accurate manner, without sacrificing the results due to time or other limitations
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> ● Complete the location analysis tasks orderly and accurately within time and budget constraints ● Perform location analysis for use in graphic overlay, and produce appropriate outputs to the satisfaction of the development team
Remark	