

A systematic procedure for developing the 3D model to evaluate the construction project progress

Abstract :

**Purpose** – This main purpose of this study is to summarize the experience at the Construction Technology and Management Center (CTMC) to develop a Digitalizing Construction Monitoring (DCM) system by integrating 3DAutoCAD drawings and digital images. The objective of this paper is to propose a framework model for the DCM system and discuss in detail the steps involved for developing and calculating the 3D coordinate values from 2D digital images. **Design/methodology/approach** – As digital images are one of the major sources of information from site, the process of measuring the project progress from images is quite challenging. This study used Photogrammetry techniques to extract the information from digital images, which can be concisely defined as the science of calculating 3D object coordinates from images, with PhotoModeler pro-version software. Issues pertaining to the quality of the 3D model derived from 2D digital images are also discussed. **Findings** – A framework model for DCM was proposed and different phases were discussed. A pilot case study on Larkin Mosque Car Parking Project was conducted to check the validity of using Photogrammetry techniques to extract 3D coordinate values by using PhotoModeler Software. Preliminary results show that significant control has been achieved to extract 3D coordinate values from 2D digital images, which and can be integrated into the digitalized system to automate the construction project monitoring process. **Originality/value** – The techniques discussed in this paper are used for monitoring the project progress systematically. The results of this study will be incorporated to develop a fully automated project progress monitoring system, which can be updated automatically as the project progresses automatically.