

UTILIZATION OF PATTERN RECOGNITION TECHNIQUES TO MONITOR THE PROGRESS OF CONSTRUCTION PROJECTS

1. Abstract

Progress monitoring is a basic function of the construction project management. Current practices of the function of progress monitoring and evaluation involve compiling site data, and comparing against the relevant planned data. The traditional monitoring practice which compares the actual collected data of individual activities against single-valued benchmarks usually results in great variation in the quality of data collected due to reporting skills as well as willingness to record accurately. The objective of this research is to utilize the Pattern Recognition (PR) techniques to classify the work planned at specified cut-off dates during the planning stage and use the classification to monitor and evaluate the progress during the construction stage. The PR technique generalizes a virtual benchmark to represent the whole project based on multiple possible outcomes generated at each cut-off date. The generalization feature offers a potential environment to overcome the problem of variation in the quality of data collected. Schemes are devised in this research to construct patterns which can be used to encode work of the project at any stage. Patterns can be readily manipulated by computer programs and substitute photographs which cannot be comprehensive in representing the work status of the interior parts of the facility. The PR concept and technique proved its robustness to monitor and evaluate progress of pre-cast erection process. The proposed research generalizes its utilization to construction projects based on the technique of Critical Path Method (CPM).