

PROGRESS MONITORING OF ERECTION OF OFF-SITE PRODUCED UNITS USING PATTERN RECOGNITION

Abstract:

Due to numerous inevitable factors, the number of off-site produced (OSP) units of concrete structures being erected a day is generally not fixed but varies appreciably. Therefore, evaluating the completed work at a certain cut-off date by benchmarking against multiple possible outcomes becomes more meaningful than only one outcome. Pattern Recognition (PR) techniques lend themselves well to accommodate evaluations based on multiple possible outcomes. The objective is to utilize PR to classify the work accomplishments achieved at predetermined cut-off dates. During planning stage, a number of patterns are prepared at the cut-off dates and used to train the Neural Network (NN). During construction stage, a pattern is prepared to describe the work accomplishment at a given cut-off date and entered to the trained NN. The NN will designate a date for the input pattern. Comparing the designated date to the actual cut-off date of the input pattern will indicate status of progress. The results were such that the developed NN could recognize patterns with an error rate of only 3.6%. Finally, the study proved that the concept and technique of PR offers a very effective and robust approach to monitor and evaluate the progress of construction projects.