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NEW HEURISTICS FOR MODELING TEMPORAL CONSTRAINTS AND GENERATING PERT NETWORK WITH MINIMUM NUMBER OF DUMMY-ARCS*

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Abstract

In this paper, we study the various types of temporal constraints in project scheduling problem (PSP), then modeling them by using some concepts of line graphs. We apply a new technique for transforming an AoN (Activity-On-Node) network and containing a significant number of arcs with temporal constraints into an AoA (Activity-on-Arrow) network or PERT (Program and Evaluation and Review Technique) network which contains fewer real arcs. Finally, we propose a new technique for constructing, for a given PSP, a PERT network having the minimum number of dummy arcs. The polynomial algorithm re-grouping all the techniques and dealing with the existence of transitive arcs is given at the end with an illustrative example.

MSC: 90B35, 90B10, 68R10

keywords: Minimal *AoA* network, PERT graph, Project scheduling problem, Temporal constraints.

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