

### عنوان مقاله:

A Multi-Mode Resource-Constrained Optimization of Time-Cost Trade-off Problems in Project Scheduling Using a Genetic Algorithm

#### محل انتشار:

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# نویسندگان:

Sedigheh Nader Abadi - Msc, Department of Industrial Engineering, Arak Branch, Islamic Azad university, Arak, Iran

Emad Roghanian - Assistant Professor, Department of Industrial Engineering, K.N.Toosi University of Technology, tehran, Iran

Hadi Aghassi - instructor, Department of computer Engineering, Iran University of Science and Technology, tehran, Iran

#### خلاصه مقاله:

In this paper, we present a genetic algorithm (GA) for optimization of a multi-mode resource constrained time cost trade off (MRCTCT) problem. The proposed GA, each activity has several operational modes and each mode identifies a possible executive time and cost of the activity. Beyond earlier studies on time-cost trade-off problem, in MRCTCT problem, resource requirements of each execution mode are also allocated and the highest quantities of these resources are limited. In the MRCTCT, the goal is to reduce the total project cost with respect to the resource restrictions .The gene value is encoded as the mode index which is selected from among modes of the activity randomly. For indicating construction mode of the activity, integer encoding is applied instead of binary encoding. Additionally, the selection of genes for mutation is based on chromosome value, as solution convergence rate is high. The crossover operator of GA is based on a two-point method. This paper also offers a multi-attribute fitness function for the problem. This function can vary by decision maker (DM) preferences (time or cost). In this paper, a two-phase algorithm is proposed in which both the effects of time-cost trade-off and resource-constrained allocation are taken into account. A GA-based time-cost trade-off analysis is improved for choosing the execution mode of every activity through the trade-off of time and cost, followed by proposing a resource constrained allocation algorithm to generate an optimum schedule without overriding the project constraints. Lastly, the model is verified by means of a case study .and a real project

# كلمات كليدى:

A multi-mode resource constrained; Project scheduling; Time-cost trade-off; Resource constrained allocation; Multiattribute fitness function

لینک ثابت مقاله در پایگاه سیویلیکا:





