عنوان مقاله:

A genetic algorithm approach for open-pit mine production scheduling

محل انتشار:

مجله بین المللی معدن و مهندسی زمین, دوره 51, شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Aref Alipour - *Department of Mining Engineering, College of Engineering, University of Tehran, Tehran, Iran*

Ali Asghar khodaiari - *Department of Mining Engineering, College of Engineering, University of Tehran, Tehran, Iran*

Ahmad Jafari - *Department of Mining Engineering, College of Engineering, University of Tehran, Tehran, Iran*

Reza Tavakkoli-Moghaddam - *Department of Industrial Engineering, College of Engineering, University of Tehran, Tehran, Iran- LCFC, Arts et Métier ParisTech, Centre de Metz, France*

خلاصه مقاله:

In an Open-Pit Production Scheduling (OPPS) problem, the goal is to determine the mining sequence of an orebody as a block model. In this article, linear programing formulation is used to aim this goal. OPPS problem is known as an NP-hard problem, so an exact mathematical model cannot be applied to solve in the real state. Genetic Algorithm (GA) is a well-known member of evolutionary algorithms that widely are utilized to solve NP-hard problems. Herein, GA is implemented in a hypothetical Two-Dimensional (2D) copper orebody model. The orebody is featured as two-dimensional (2D) array of blocks. Likewise, counterpart 2D GA array was used to represent the OPPS problem's solution space. Thereupon, the fitness function is defined according to the OPPS problem's objective function to assess the solution domain. Also, new normalization method was used for the handling of block sequencing constraint. A numerical study is performed to compare the solutions of the exact and GA-based methods. It is shown that the gap between GA and the optimal solution by the exact method is less than % 5; hereupon GA is found to be .efficiently in solving OPPS problem

کلمات کلیدی:

Open-Pit Mine, production scheduling, metaheuristic and genetic algorithm