

عنوان مقاله:

Comparison of golden section search method and imperialist competitive algorithm for optimization cut-off grade-
case study: Mine No. 1 of Golgohar

محل انتشار:

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نویسندگان:

S Mohammadi - School of Mining, Petroleum & Geophysics Engineering, University of Shahrood, Shahrood, Iran

M Ataei - School of Mining, Petroleum & Geophysics Engineering, University of Shahrood, Shahrood, Iran

R Kakaie - School of Mining, Petroleum & Geophysics Engineering, University of Shahrood, Shahrood, Iran

E Pourzamani - Golgohar Iron Ore Mine, Sirjan, Iran

خلاصه مقاله:

Optimization of the exploitation operation is one of the most important issues facing the mining engineers. Since several technical and economic parameters depend on the cut-off grade, optimization of this parameter is of particular importance. The aim of this optimization is to maximize the net present value (NPV). Since the objective function of this problem is non-linear, three methods can be used to solve it: analytical, numerical, and meta-heuristic. In this study, the Golden Section Search (GSS) method and the Imperialist Competitive Algorithm (ICA) are used to optimize the cut-off grade in mine No. 1 of the Golgohar iron mine. Then the results obtained are compared. Consequently, the optimum cut-off grades using both methods are calculated between 40.5% to 47.5%. The NPVs obtained using the GSS method and ICA were 18487 and 18142 billion Rials, respectively. Thus the value for GSS was higher. The annual number of iterations in the GSS method was equal to 18, and that for ICA was less than 18. Also computing and programming the process of golden section search method were easier than those for ICA. Therefore, the GSS method studied in this work is of a higher priority.

کلمات کلیدی:

Optimization, Cut-off Grade, Golden Section Search (GSS) Method, Imperialist Competitive Algorithm (ICA), Mine No. 1 of Golgohar

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