Abstract

Khaled M. Shawki

EARTHMOVING PRODUCTIVITY ESTIMATION USING GENETIC ALGORITHM

This paper presents a framework for optimizing earth moving operations using computer simulation and genetic algorithms (GA) as an optimizer. The optimization aims at maximizing production of an earth moving fleet consists of an excavator and trucks as hauling units. The objective function considers the variables that influence the production of earth moving operations such as rolling resistance, grade resistance , vehicle weight , payload , horse power ..etc. The constraints of the objective function are considered such as speed limits , payload capacity, etc .A sizing problem is considered to tune the GA parameters such as ion, crossover, population size , mutation, etc. A numerical examples are presented using a developed software called "FLEET PRODUCTION" to illustrate the practical features of the proposed software and to demonstrate its capacities in ing optimum fleet configurations. "FLEET PRODUCTION" is designed to assist engineers and contractors to the best fleet combination of hoe and haulers that can complete an earth moving operation with maximum production