

Title: Optimization of Land Leveling Operations through Least Square Method and Its Comparison with the Genetic Algorithm and Particle Swarm Optimization Algorithm.

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Abstract:

For a uniform distribution of water, decrease in water waste and decrease in erosion of soil, it is important that a land be prepared with proper slopes along its length as well as width. The aim of leveling is to create appropriate slopes for irrigation and drainage on the lands that were not already properly levelled and of the same time creating the level surface with a minimum transport of soil. Throughout the present study, characteristics of a level plane of an agricultural land are modeled by programming algorithm with the results being compared with Minimum Least Square method. Statistical and descriptive results show that Genetic Algorithm and Particle Swarm Optimization algorithm benefit from more accuracies than Minimum Least Square. Also, practice of such restrictions as maximum depth of excavation is easy to be applied in this method. In addition, using Genetic Algorithm method decreased the volume of excavation by 20% and 17.5%. Another method, called Particle Swarm Optimization, was also applied with the results indicating that the volume of the soil cut and fill for Particle Swarm Optimization method was recorded as less than that in Genetic Algorithm method.

Biography

Alzoubi has completed his Ph.D. at the age of 40 years at Tehran University and postdoctoral studies from Tehran University School of Surveying Geospatial Engineering-Department of Surveying and Geomatics Engineering. He is the director at the Directorate of Engineering and Transportation, a premier service organization. He has published more than 15 papers in reputed journals and has been serving as an editorial board member of repute. He Opening and studying the financial offers and the organization of the fundamental record, supervising the efficiency of electrical generators at Nseeb border center, and Supervising the efficiency of agricultural machinery at the ministry of agriculture.

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