

## Prediction of environmental indicators in land leveling using artificial intelligence techniques

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### Abstract

Land leveling is one of the most significant strides in soil planning and development. Despite the fact that land leveling with machines requires significant measure of vitality, it conveys a reasonable surface incline with negligible decay of the dirt and harm to plants and different living beings in the dirt. In any case, specialists during late years have attempted to decrease petroleum derivative utilization and its pernicious symptoms utilizing new procedures, for example, Artificial Neural Network (ANN), Imperialist Competitive Algorithm – ANN (ICA-ANN), and relapse and Adaptive Neuro-Fuzzy Inference System &#40;ANFIS&#41; and Sensitivity Analysis that will prompt a perceptible improvement in the earth. In this examination impacts of different soil properties, for example, Embankment Volume, Soil Compressibility Factor, Specific Gravity, Moisture Content, Slope, Sand Percent, and Soil Swelling Index in vitality utilization were researched. The examination was comprised of 90 examples were gathered from 3 unique areas. The lattice size was set 20 m in 20 m (20\*20) from a farmland in Karaj territory of Iran. The point of this work was to decide best direct model Adaptive Neuro-Fuzzy Inference System &#40;ANFIS&#41; and Sensitivity Analysis so as to anticipate the vitality utilization for land leveling. As indicated by the aftereffects of Sensitivity Analysis, just three boundaries; Density, Soil Compressibility Factor and, Embankment Volume Index had critical impact on fuel utilization. As per the aftereffects of relapse, just three boundaries; Slope, Cut-Fill Volume (V) and, Soil Swelling Index (SSI) had huge impact on vitality utilization. Utilizing versatile neuro-fluffy derivation framework for forecast of work vitality, fuel vitality, complete apparatus cost, and all out hardware vitality can be effectively illustrated. In correlation with ANN, all ICA-ANN models had higher exactness in forecast by their higher R2 worth and lower RMSE esteem.



### Biography:

Isham Alzoubi has completed his PhD at the age of 27 years from Doctor of Philosophy degree in Agricultural Mechanization Engineering (University of Tehran – Iran) University and Postdoctoral Studies from School of Surveying Geospatial Engineering-Department of Surveying and Geomatics Engineering, University of Tehran. Currently working as a General commission for scientific Agricultural Research – Damascus – Syria (Mechanical Engineer). He has published more than 16 papers in reputed journals and has been serving as an editorial board member of repute.

### Speaker Publications:

1. Modeling and predict environmental indicators for land leveling using adaptive neuro-fuzzy inference system (ANFIS), and regression.
2. Comparing ANFIS and integrating algorithm models (ICA-ANN, PSO-ANN, and GA-ANN) for prediction of energy consumption for irrigation land leveling, Oct 2017

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