Impact of Physico-Chemical Properties for Soils Type Classification of OAK using different Machine Learning Techniques

Volume 177
Number 17

Year of Publication: 2019

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Abstract

Physico-Chemical properties of soils from different sites of Oak forest (Banj Oak (Quercus leucotrichophora), Kharsu Oak (Quercus semecarpifolia),Tilonj Oak(Quercus floribunda) ) in Uttarakhand are analysed. Generally, all the factors affecting this soil site that is to say sand%, silt%, clay%, available moisture%, pH value, organic matter and carbon - nitrogen ratio are analysed across three levels of soil depths (0 to 10 cm, 10 to 20 cm, 20 to 30 cm), three slopes (Hill base (HB), Hill Slope (HS) and Hill Top (HT)) and two level of disturbances (Disturbed and Undisturbed) of the Oak forest. Machine Learning algorithms can be used to forecast and automate soil site classes on different soil sample data. This Paper weighs different supervised machine learning algorithms to classify Oak forest soil site. For this classification, support vector machine (SVM), Logistic Regression (LR), Linear Discriminant Analysis (LDA), K-Nearest Neighbour (KNN), Decision Tree Classifier (CART) and Gaussian Naïve Bayes (NB) algorithms are recommended and evaluated. Simulation is run by using Python machine learning libraries. The working performance of all the algorithms observed in the form of accurateness and consistency.
References


**Index Terms**

Computer Science  
Artificial Intelligence

**Keywords**

Accuracy, Classification; Oak; Physico-chemical factors; Regression; Soil Type; Support vector machines;