

Abstract

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Ontogenic Neural Network for Pixel Classification of Remote Sensing Image

this paper proposes an ontogenic neural network with application to the classification of remote sensing data. the purpose of this approach is the simultaneous design training of a neural network classifier by means of genetic algorithm. the genetic algorithm, with its global search capability, finds a network structure with its weights that maximizes a classification fitness measure in one process, thus, avoiding the trial-and-error process of estimating the network structure. the idea of the presented classification method is to find a set of masks that encompasses all objects of a certain class, while screen out any objects of other classes. before trying to find the suitable masks, the data is projected onto a set of significant principal axes the projected data is used in the training process. thus the data becomes more spread which makes it easy to partition into different classes. moreover, this technique reduces the dimension of the used masks, hence the neural network nodes. a landsat thematic mapper data is used to demonstrate the usefulness of the proposed method.