MAPPING INDONESIAN REGION BASED ON ITS POLLUTION, SOCIAL DEMOGRAPHIC AND GEOGRAPHIC DATA USING SELF ORGANIZING FEATURE MAP

by Kuswari Hernawati, Nur Insani, Bambang S.H.M, Nur Hadi W., Sahid

ABSTRACT

This research aims to mapping the 33 (thirty-three) provinces in Indonesia based on the pollution data including air, water and soil, also demographic and social data and its modeled by clustering the regions into certain classes (clustering). The method used in this study was unsupervised method that combines the basic concept of Kohonen or Self-Organizing Feature Maps (SOFM). Method is done by providing design parameters for the model based on data related directly/indirectly to the pollution, which are the demographic and social data also pollution levels of air, water and soil, as well as the geographical situation of each province. The parameters used consists of 19 features / characteristics, among which the human development index, the number of vehicles, the availability of the plant's water absorption and flood prevention, as well as geographic and demographic situation. The data used was secondary data drawn from the Central Statistics Agency (BPS), Indonesia. The data are then mapped by SOFM from a high-dimensional vector space into two-dimensional vector space based on the closeness of the location based on the Euclidean distance. The resulting output is represented by grouping of the particular classes. The thirty-three provinces divided into five clusters, where each cluster has features / characteristics vary. From these results, it is hoped can be an input for the prevention and resolution efforts pollution problems are right on target and efficiently in accordance with the characteristics of each cluster

Kata Kunci: *Self-Organizing Feature Maps (SOFM), the Euclidean distance, clustering*