The Extraction of Basic Soil-landscape Model From Existing Soil Maps Using Data Mining. (S05-qi151251-Oral)

Authors:

- F.Qi - *University of Wisconsin-Madison*
- A.X.Zhu. - *University of Winsconsin-Madison*
- J.E.Burt. - *University of Wisconsin-Madison*

Abstract:

We present a knowledge discovery procedure for extracting knowledge of basic soil-landscape model from a soil map. The procedure consists of four major steps: data preparation, data preprocessing, data mining, and knowledge consolidation. The See5 decision tree learning program is used for pattern extraction. Two other inductive learning algorithms, Naive Bayes and artificial neural network, are also investigated for a comparison concerning learning accuracy and result comprehensibility. The data preprocessing step has exhibited an important role in obtaining better accuracies. A specific method for sampling pixels based on modes of environmental histograms has proven to be effective in terms of reducing noise and constructing representative sample sets. Among the three algorithms investigated, the See5 algorithm proves to be an accurate method and produces the most comprehensible results, which are consistent with the soil-landscape model (expert knowledge) used in creating the soil map.

Corresponding Author Information:

Feng Qi
University of Wisconsin-Madison
550 N. Park St., Dept. of Geography
Madison, WI 53706

phone: (608)262-1857
e-mail: fqi@students.wisc.edu

Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 1:30 pm

Keywords:

data mining, soil-landscape model, decision tree