Viscovery® SOMine 7 – Data Sheet

Extension Module | Explore and Classify

Advanced SOM model exploration, clustering, and classification

Main Functions and Features

General characteristics

- **Explore and Classify** is an extension module of the Viscovery SOMine Suite. It requires the **Visual Clusters** core module and can optionally be combined with other modules of the suite.
- The module provides multiple features for advanced exploration of the self-organizing map (SOM) model and for the interactive definition of alternative segmentations. In addition, the **Classify** workflow guides the user through the application of segmentations to new data and the evaluation of classification results in comparison to control groups.

Group profiling and comparison

- Identification of significant variable deviations using interactive profiling of data groups (pools)
- Creation of groups from clusters, nodes, neighborhoods, or arbitrary selections
- Evaluation of differences between two arbitrary groups using a statistical contrast
- Define reference group from any cluster, node, neighborhood, or arbitrary selection
- Evaluation of non-trivial group descriptives using the "Profile" chart and "Cluster" pane

Interactive data statistics for arbitrary map regions

- Descriptive statistics
- Attribute histograms
- Correlation analysis
- Principal component analysis
- Frequency tables
- Box plots
- Scatter plots

Cluster characteristics

- Automated comparison of existing clusters regarding significant differences in attribute means
- Display of attributes characterizing each cluster based on cluster profiles
- Option for showing each attribute in the cluster where it is extreme

System state monitoring

- Dynamic simulation of process trajectories in the SOM model
- Sequential reading of records from time-ordered data file
- Selection of velocity and trace length of simulation

Multiple segmentations

- Creation of additional segmentations in an existing SOM model
- Interactive selection of cluster method, number of clusters, and attributes for new segmentation
- Display of existing segmentations in the dedicated "Segmentation" window
- Annotation, comparison, copy, and deletion of segmentations

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Interactive cluster definition

- Manual adjustment of cluster boundaries by joining and deleting clusters
- Definition of a new cluster or extension of an existing cluster with an arbitrary selected area
- Automatic determination of cluster names from a nominal attribute
- Annotation and renaming of clusters
- Assignment of post-processing formulas to clusters

Classification

- Application of models to new data with the dedicated **Classify** workflow
- Selection of a segmentation as classifier
- Automatic random generation and administration of control groups
- Rapid classification of data records of a new data mart, including evaluation of post-processing formulas
- Export of classification results and, for each record, associated cluster statistics and map node values to tab-delimited flat-text files (*.txt) and Microsoft Excel files (*.xlsx)

Evaluation of classification results

- Visualization of applied data distributions over the SOM model
- Specification of real class names in an additional attribute for test or evaluation purposes
- Additional visualization of classification error over the map if real class memberships are known
- Generation of charts for evaluation of the model application and comparison to the control group