

INTEGRATION OF SELF ORGANIZING MAPS (SOM) INTO A  
GEOGRAPHIC INFORMATION SYSTEMS (GIS) DATA MODEL

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## **ABSTRACT**

Integration of self-organizing maps (SOM) into a geographic information systems (GIS) data model is an area that has received little attention, yet it is essential for information summarization. SOM belongs to the class of unsupervised neural networks with competitive and cooperative learning algorithm ability. The algorithm has robust capabilities for data exploration and pattern recognition. SOM facilitates clustering, data visualization and projection efforts and provides a versatile platform upon which various data exploration methods can be constructed efficiently. The training file (SOM prototype data) has potential use in spatially-oriented databases. In this study, we propose to integrate SOM prototype data with a GIS data model to serve as a convenient workbench for information summarization. Current demand for novel approaches with a wide potential to visualize or discover unknown facts and knowledge has motivated this work.

**Key Words:** self-organizing maps; SOM; spatial databases; cluster analysis; pattern recognition; data mining