

## Experiment 10

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Aim: Explanation on (i) spatial association rules.

(ii) spatial classification

(iii) spatial clustering (DB-scan)

Theory: Spatial data, encompassing both two dimensional representation of Earth's surface & complex 3D spaces. Involves geometric information & can be discrete or continuous. The spatial mining algorithms are:-

(i) Spatial association Rule and Apriori Algorithm:

It defines spatial association as relationship among variables over space. It utilizes the apriori algorithm. Initially designed for transactional database. It determines associations strength or weakness between two or spatial objects.

Advantages include simplicity & ease of implementation. Disadvantages include slower speed and high space and time complexity.

(ii) Spatial classification with KNN algorithm.

It assigns object to classes based on attribute values, considering distance, direction or connectivity, relationship. It implements KNN algorithm. It works on similarity measures, categorizing new data points based on similarity to existing data.

Advantages include simplicity and robustness.  
Disadvantages include the high computation cost.

(iii) Spatial clustering with DB scan Algorithm.

Clustering identifies homogeneous group of spatial object based on attribute values. The density based spatial clustering of application with noise (DB scan) is a density based clustering algorithm.

It uses parameters  $\min\text{pts}$  &  $\epsilon$  to identify the core, boundary & noise points.

Conclusion: Hence, we learnt that spatial data mining algorithms play crucial role in spatial analysis.