COMP40370 Practical 7

Data Warehousing

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Please submit your report in PDF format, and make sure it is 5 pages max.

Question 1

Suppose that a city transportation department would like to perform data analysiss on *motorway traffic* for the planning of a motorway construction based on the city traffic data collected at different hours every day.

1. Design a spatial data warehouse that stores the motorway traffic information so that people can easily see the average and peak time traffic flow by motorway, by time of day, and by weekdays, and the traffic situation when a major accident occurs.

2. What information can we mine from such a spatial data warehouse to help city planners?

3. This data warehouse contains both spatial and temporal data. Propose one mining technique that can efficiently mine interesting patterns from such a spatiotemporal data warehouse.

Question 2

Traffic situations are often auto-correlated: the congestion at one motorway intersection may trigger the congestion in nearby motorway segments after a short period of time. Suppose we are given motorway traffic history data in Dublin, including road construction segment, traffic speed associated with motorway segment, direction, time, and so on. Moreover, we are given weather conditions by weather bureau in Dublin.

Design a data mining method to find high-quality spatiotemporal association rules that may guide us to predict what could be the expected traffic situation at a given motorway location.