Location-based Information Delivery
Using Stream Processing Engine StreamSpinner

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Introduction

Network and sensor device technologies are advancing. We can easily obtain real-world information as data streams. Example of data streams:

- Location information of moving objects
- Temperature and brightness monitored by sensor devices

StreamSpinner is a stream processing engine we are developing.

Features of StreamSpinner:

- Query processing over data streams
- Integration of data streams and databases
- Event driven continuous query execution
- Novel multiple query optimization technique
- Java API for application development

StreamWrapper

- Detects arrivals of new data units and transforms them into tuples
- Notifies Mediator of arrival events

Mediator

- Evaluates continuous queries associated with the event from wrappers

SpinQL

Data streams are modeled as unbounded relations. SpinQL is our event driven continuous query language.

```
MASTER Sensor
FROM Sensor[1msec], Seat
WHERE Seat.NodeId = Sensor.NodeId
```

MASTER clause gives master information sources.
FROM clause can define a window for each data stream. Tuples arriving within the windows are used to generate the results.

Multiple Query Optimization

Optimizer derives query plans sharing common operators. Our method takes execution timings of queries into account to optimize multiple event driven continuous queries.

Demonstration System

Using StreamSpinner, we have developed location-based information delivery services in an exhibition.

Experimental Evaluation

The virtual exhibition hall has 500 seats in rest areas. Each sensor sends brightness of the seat at 10-second intervals.

Related work


Reference: URL: http://www.streamspinner.org