Department of Computer Science, The University of Hong Kong

Student Research Seminar

Evaluating Continuous Probabilistic Queries over Imprecise Sensor Data

Mr. Zhang Yinuo

Date & Time:
December 4, 2009
Friday
2:00 pm

Venue:
Room 328
Chow Yei Ching Building
The University of Hong Kong

Abstract:

Pervasive applications, such as natural habitat monitoring and locationbased services, have attracted plenty of research interest. These applications deploy a large number of sensors (e.g. temperature sensors) and positioning devices (e.g. GPS) to collect data from external environments. Very often, these systems have limited network bandwidth and battery resources. The sensors also cannot record accurate values. The uncertainty of these data hence has to been taken into account for query evaluation purposes. In particular, probabilistic queries, which consider data impreciseness and provide statistical guarantees in answers, have been recently studied. We investigate how to evaluate a longstanding (or continuous) probabilistic query and propose the probabilistic filter protocol, which governs remote sensor devices to decide upon whether values collected should be reported to the query server. This protocol effectively reduces the communication and energy costs of sensor devices. We also introduce the concept of probabilistic tolerance, which allows a query user to relax answer accuracy, in order to further reduce the utilization of resources. Extensive simulations on realistic data show that the method reduces by address more than 99% of savings in communication costs.

About the Speaker:

Zhang Yinuo is a full-time MPhil student in the Department of Computer Science, The University of Hong Kong, under the supervision of Dr. Reynold C. K. Cheng. His research interests are probabilistic queries monitoring and uncertain data management.

All are welcome!
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