

*Department of Mathematical and
Computer Sciences*

A New Perspective on Query Semantics in Dynamic Environments

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Abstract: Queries are convenient abstractions for the discovery of information and services, as they offer content-based information access. In distributed settings, query semantics are well defined, e.g., queries are often designed to satisfy ACID transactional properties. When query processing is introduced in a dynamic network setting, achieving transactional semantics becomes complex due to the open and unpredictable environment. In addition, a number of applications for dynamic networks may require guarantees that lie outside of strict transactional semantics. A new perspective on query semantics is needed to allow us to precisely define and reason about the kinds of guarantees needed by emerging applications. In this talk, I present a new query processing model for mobile ad hoc networks that is suitable for expressing a wide range of query semantics; the semantics differ in the degree of consistency with which query results reflect the state of the environment during query execution. A practical and significant contribution of this work is a protocol for query processing that automatically assesses and adaptively provides an achievable degree of consistency given the operational environment throughout its execution. The protocol attaches an assessment of the achieved guarantee to returned query results, allowing precise reasoning about a query with a range of possible semantics.

BIO: Jamie Payton is an Assistant Professor of Computer Science at the University of North Carolina at Charlotte, where she is a member of the Networking Research Laboratory and the Charlotte Visualization Center.

She received her doctorate in Computer Science at Washington University in St. Louis. Her current research interests lie in the areas of software engineering and pervasive computing, with a focus on applying software engineering principles and techniques to aid in the development of applications for use in mobile ad hoc and sensor networks.

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