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### **RESEARCH ARTICLE**



# XML Dissemination Scheme for Mobile Computing Based on Lineage Encoding

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**Abstract —** In wireless environments, broadcasting is an efficient and scalable method to broadcast information to a massive number of clients. We propose an energy and latency efficient XML dissemination scheme for the wireless mobile computing environments. This paper presents a novel unit structure called G-node for streaming XML data in the wireless system. It applies the benefits of the structure indexing and attributes summarization that can integrate relevant XML elements into a group. It provides a path for selective access of their attribute values and text content. The G-node structure removes structural overheads of XML documents, and enables clients to avoid downloading of unwanted data during query processing. We also introduce a lightweight and effective novel encoding technique, called Lineage Encoding, to support evaluation of predicates and twig pattern queries over the wireless stream. The Lineage Encoding technique expresses the parent-child relationships among XML elements as a sequence of bit-strings, called Lineage Code(Lineage Code(V), Lineage Code(H)), and provides basic operators and functions for efficient twig pattern query processing at clients side.

**Keywords—** Twig pattern matching, Wireless XML streaming, mobile computing, wireless data broadcasting

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