

分散 XML に対する XSLT 実行手法に関する研究

A Study on XSLT Transformation Method for Distributed XML

学籍番号 : 201321653

氏名 : 水本 弘貴

Hiroki MIZUMOTO

Recently, the sizes of XML documents have rapidly been increasing. Distributed XML is a novel form of XML document, in which an XML document is partitioned into fragments and managed separately in plural sites. Distributed XML documents can often be managed more easily than a single large document, according to geographical and/or administrative factors.

In this paper, we propose a method for performing transformation efficiently for distributed XML documents. In order to perform XSLT transformation efficiently for distributed XML, this method focuses on achieving efficient evaluation of XSLT patterns. In distributed environment, a site has to access other sites many times to evaluate an XSLT pattern. To reduce such accesses, we propose two novel techniques; (1) precomputation of ancestors and (2) cache for predicate evaluation.

We assume that the expressive power of XSLT is restricted to an extended version of unranked top-down tree transducer. Our tree transducer is extended so that, in addition to a single label, a location path can be used as a match attribute of an XSLT template.

We implemented our method in Ruby and made evaluation experiments. We have the following two settings of evaluation experiments; (a) Fix the stylesheet and measure the response time under various sizes of XML documents and (b) Fix the XML document and measure the response time of different stylesheets. These results suggest that our method is faster than centralized method regardless the stylesheets and our method is more efficient than a centralized approach.

研究指導教員 : 鈴木伸崇

副研究指導教員 : 若林啓