

スキーマ進化で影響を受ける XSLT 規則の検出および修正手法
An Algorithm for Detecting and Correcting XSLT Rules Affected
by Schema Updates

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DTDs are continuously updated according to changes in the real world. Updates to a DTD affect the behavior of XSLT stylesheets as well as XML documents under the DTD. To maintain the consistencies of XSLT stylesheets with an updated DTD, we have to detect the XSLT rules affected by DTD updates and correct the affected XSLT rules so that the XSLT stylesheets transform documents under the updated DTD appropriately. However, correcting such affected XSLT rules manually are a highly difficult and time-consuming task due to the following reasons.

- Recent DTDs are becoming larger and more complex. According to an investigation of real-world DTDs, the average number of rules turns out to be more than 50.
- XSLT is complex especially for unskilled users, and writing an XSLT stylesheet is an expert task.
- Users do not always fully understand the dependencies between XSLT stylesheets and old/updated DTDs.

To address this problem, in this thesis, we propose an algorithm for detecting and correcting XSLT rules affected by DTD updates. We assume that the expressive power of XSLT is restricted to an extended version of unranked top-down tree transducer. We first give an algorithm for detecting XSLT rules affected by DTD updates by conducting dependency graphs. Based on the result, we then propose an algorithm for correcting rules affected by DTD updates.

We implemented our method in Java and made evaluation experiments. The experiment results suggest that most of rules generated by the algorithms were appropriate.

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