

On the tree-transformation power of XSLT

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Abstract

XSLT is a standard rule-based programming language for expressing transformations of XML data. The language is currently in transition from version 1.0 to 2.0. In order to understand the computational consequences of this transition, we restrict XSLT to its pure tree-transformation capabilities. Under this focus, we observe that XSLT 1.0 was not yet a computationally complete tree-transformation language: every 1.0 program can be implemented in exponential time. A crucial new feature of version 2.0, however, which allows node sets over temporary trees, yields completeness. We provide a formal operational semantics for XSLT programs, and establish confluence for this semantics.

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Alexandr Korlyukov, who was with Grodno State University, Belarus, sadly passed away shortly after we agreed to write a joint paper.