Validation and Boolean operations for Attribute-Element Constraints

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Abstract

Algorithms for validation and boolean operations play a crucial role in developing XML processing systems involving schemas. Although much effort has previously been made for treating *elements*, very few studies have paid attention to *attributes*. This paper presents a validation and boolean algorithms for Clark's attribute-element constraints. Although his mechanism has a prominent expressiveness and generality among other proposals, treating this is algorithmically challenging since naive approaches easily blow up even for typical inputs. To overcome this difficulty, we have developed (1) a two-phase validation algorithm that uses what we call *attribute-element automata* and (2) intersection and difference algorithms that proceed by a "divide-and-conquer" strategy.