

Date: 16 August 2021

1. Introductory text: “[...] reachable configurations is the the language [...]” should be “[...] reachable configurations is the language [...]”

Fixed in the latest arXiv version (16 August 2021).

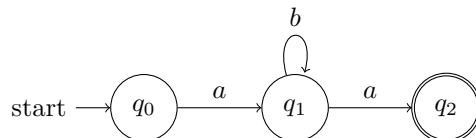
2. Page 117 in the published version. The formula used for the definition of $L^{\text{simple}}(\mathcal{A})$ is false. This does not affect the results, as this formula is not used but only the intended meaning of this language. The correct definition is (\mathcal{A} an NFA)

$$L^{\text{simple}}(\mathcal{A}) = \{w \in \Sigma^* \mid w \text{ labels a simple accepting path in } \mathcal{A}\},$$

where a path is simple if no state occurs more than once along the path, i.e., the states we end up after each prefix are distinct for distinct prefixes, and a path is accepting if it starts at the initial state of \mathcal{A} and ends in a final state. In the text the formula

$$\{w \in L(\mathcal{A}) \mid \delta(q_0, w) \setminus \left(\bigcup_{u \in \text{Pref}(w) \setminus \{w\}} \delta(q_0, u) \right) \neq \emptyset\}$$

was written, which does not capture the intended meaning, and hence is wrong. For example, consider:



In this automaton $\delta(q_0, aba) \setminus (\delta(q_0, \varepsilon) \cup \delta(q_0, a) \cup \delta(q_0, ab)) \neq \emptyset$, but aba labels a non-simple path. In fact, the infinitely many words from ab^*a fulfill the (wrong) formula (and we could only have finitely many simple paths).

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Additional comment: For the computational complexity results, it might give shorter proofs to use the longest path in the directed acyclic graph (DAG) corresponding to the partially ordered NFA (which is computable in polynomial time in this case), or even just the number of states n , and construct automata over $[n] \times \dots \times [n]$ ($|\Sigma|$ times) for the commutative closure, instead of computing the automaton from the proof of Theorem 2.