

# Subset Construction is P-complete

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## ABSTRACT

In this work the experimental results along with proof are presented: the state explosion doesn't occur in specific cases after decomposition of regular expression into non-deterministic finite automata (NFA), thus, the P-complete procedure to take turn for converting NFA into deterministic finite automaton (DFA) with respect to the De Morgan Law.

## INTRODUCTION

The conversion of NFA to DFA, or subset construction, and its possibility proof first appeared in [1] has an exponential complexity of  $O(2^n)$  and thus is EXP or NP-complete.

Many techniques were done before in order to avoid the effect of state explosion [2, 3], however, we present the De Morgan law [4] for rewriting both union and intersection operators as well as in extended regular expressions, which leads to P-complete result.

The notion for operator complexity is also given first defined in [5].

## PROOF

The proof is same as in [4].

## CONCLUSION

Thus, we have proved that subset construction, or powerset construction, is polynomial, or P-complete, with respect to the prior obtained results.

## REFERENCES

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