

let m be the length of the expression and n be the length of the string.

1. DP. $O(nm)$.

2. $O(\frac{nm \log \log n}{\log^{3/2} n} + n + m)$ for general regular expression matching [1]. for a fixed size alphabet, we can shave the $\log \log n$.

it seems that this is still an open problem.

note. for deterministic regular expressions, the running time can be improved [2].

References

- [1] Philip Bille and Mikkel Thorup. Faster regular expression matching. In *International Colloquium on Automata, Languages, and Programming*, pages 171–182. Springer, 2009.
- [2] Benotît Groz, Sebastian Maneth, and Slawek Staworko. Deterministic regular expressions in linear time. In *Proceedings of the 31st ACM SIGMOD-SIGACT-SIGAI symposium on Principles of Database Systems*, pages 49–60. ACM, 2012.