

# Semantics and Implementations of Regular Expression Matching

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Regular expression matching is an essential tool in string manipulating programs and plays crucial roles in scripting languages. Even though the theory of regular languages is well established, the semantics of regular expression matching in programming languages is quite involved due to ambiguity of regular expressions and various exotic features.

In this talk, we focus on regular expression matching based on the strategy of Perl and formulate its semantics as a nondeterministic parser using the list monad. Furthermore, we show that the standard implementation of matching can be obtained just by replacing the monad with one for backtracking. Finally, we discuss the semantics of POSIX-compliant regular expression matching. The talk is partly based on [1].

## References

- [1] Yasuhiko Minamide, Yuto Sakuma, and Andrei Voronkov. Translating regular expression matching into transducers. In *Proceedings of the 12th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing*, pages 107 – 115, 2011.