Abstract

We give a constructive formalization of the equivalence between regular expressions, finite automata and the Myhill-Nerode characterization. We give procedures to convert between these characterizations and prove their correctness. Our development is done in the proof assistant COQ. We make use of the SSREFLECT plugin which provides support for finite types and other useful infrastructure for our purpose. Our goal was to make the formalization as concise as possible. The entire development consists of approximately 2,700 lines of code.