Michael Persaud

CS370

Homework Assignment

How does the regular grammar encode in the finite state automaton?

A regular grammar encodes a FSA through its use of production rules which shows what words belong to a certain language. This translates to a FSA as it ends up on a final state which in turn means that it produces a valid word for the grammar. The two are synonymous representation of the same thing. A regular grammar provides a mathematical approach of defining valid words and a Finite state automaton is a graphical representation of creating valid words.

How does the Turing machine stop if there is a rule it keeps processing and how does it compare to a regular state automaton with undefined inputs?

A regular state automaton given an undefined input will crash as it doesn’t know where to go. A turing machine will also crash if it is given an undefined output however this doesn’t signify that it has completed or stopped. Alan turing proved through the halting problem that you cannot determine from an input whether a program will finish or halt. In this same regard, A turing machine given a language with infinite words will continue on forever and also an FSA given a language with every possible word will continue on forever.