

Church-Turing Thesis Turing Machines example[Motivation for Turing Machines] Consider the language $= \{w\#w \mid w \in (0+1)^*\}$, this is not , in particular - not regular. With that said - given a word 00110#00110 (on the strip of a), one can decide if this word is in the language. This process can be described by a Turing machine: itemize

C heck if the word is of the form $(0+1)^*\#(0+1)^*$. If not - reject.

S tart from the first state, go to the symmetrical opposite, write X on the corresponding letters. If some corresponding pair do not agree - reject.