Aho-Corasick Algorithm

Go To function: Represented as a 2-D array where we store the next state for the current state and character.

Contains the other state transition that can be done using ‘a’ from the last transition.

Failure Function: This store all the edges that can be followed when the current character does not have an edge in the Trie.

Start state is depth 0

The depth s such that g(0, a) = s is of depth 1.

And so on…

Calculation of the failure function:

Construction of failure function phase:

* Begin from depth 1, 2, 3, …, n
* The failure function for state 0 is not defined.
* f(s) = 0 for all s such that g(0, a) = s, or in other words all states with depth 1.
* The failure function of the states d with depth d > 1 is computed using all states of depth less than d.
* For state with depth d, consider each state r of depth d-1.
* If g(r, a) = fail for all a, do nothing
* Otherwise, for each symbol a such that g(r, a) = s, do:
* State = f(r)
* Execute state = f(state) zero or more times until a value for state is obtained such that g(state, a) != fail.

Output function: