**Aho-Corasick Algorithm**

The Aho-Corasick algorithm is a string searching algorithm that efficiently matches multiple patterns simultaneously against a text. Here is the breakdown of its time complexity:

**Worst Case Time Complexity:** The worst-case time complexity of the Aho-Corasick algorithm is O(n + m + z), where:

* n is the length of the text to be searched,
* m is the total length of all patterns to be searched for,
* z is the total number of occurrences of patterns in the text.

**Average Case Time Complexity**: The average-case time complexity of Aho-Corasick is also O(n + m + z), making it efficient for practical use. It scans the text once and efficiently handles multiple pattern matches.

**Dependence on Pattern Set:** The efficiency of Aho-Corasick depends on the number and length of the patterns being searched for. However, it generally performs well in practice, especially for large pattern sets.

**Optimality:** Aho-Corasick is not designed to optimize for any specific heuristic or optimization criterion. Instead, it efficiently constructs a finite automaton (trie) from the given patterns, enabling fast pattern matching.

In summary, the Aho-Corasick algorithm offers linear-time complexity in terms of the text length and the combined length of patterns to be searched for, making it a practical choice for string matching tasks. Its efficiency makes it suitable for various applications, including string searching, lexical analysis, and network intrusion detection.