**Introduction**

* The core of this problem is finding a given set of patterns within a text.
* designed to efficiently find all occurrences of any of a given set of patterns within a text.
* Used following algorithms used
  + Aho-corasick
  + Trie search
  + KMP Algorithm

Motivation

The motivation behind developing and using multiple pattern search algorithms can be summarized as follows:

Multiple pattern search algorithms are fundamental in various computational tasks where there's a need to scan large volumes of text for several patterns simultaneously. This capability is crucial in applications such as text analytics, cybersecurity (for intrusion detection systems), bioinformatics (for DNA sequencing), and many others where performance and efficiency can have significant implications. By optimizing the process of pattern recognition, these algorithms reduce computational time and resources, allowing for real-time processing and analysis, which is especially valuable in contexts that require immediate results, like monitoring for harmful content or detecting fraudulent activity. They represent advancements in the ability to manage and extract meaning from ever-growing data sets in an increasingly data-driven world.

Efficiency: Highlights the algorithm's ability to process large datasets quickly and use computational resources effectively.

Scalability: Emphasizes the capability to handle an increasing number of patterns or growing data sizes without a loss in performance.

Real-world Application: Underlines the practical uses in various fields, demonstrating the algorithm's versatility and impact.

Accuracy: Ensures that the algorithm correctly identifies all occurrences of the pattern set without false positives or negatives.

Complexity: Addresses the computational complexity of the algorithm in terms of time and space, which affects its practical usability.

Versatility: Describes the algorithm’s adaptability to different types of data or text, including languages and encoding schemes.