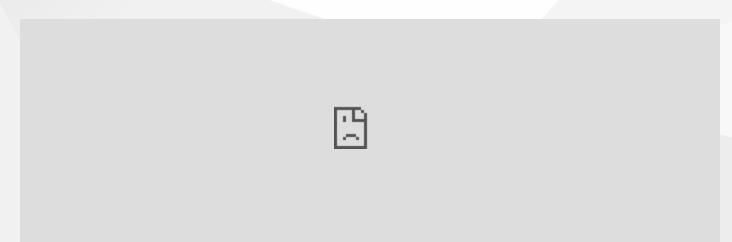
# **CE205 Data Structures**

# Week-12

String Search Algorithms, Tries, Data Structures for Disjoint Sets

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# Outline CE205 Data Structures Week-12

- Strings
  - Reverse Factor Algorithm (String Search)
    - Knuth-Morris-Pratt Algorithm
    - Horspool Algorithm
    - Boyer-Moore Algorithm
    - Brute-Force / Linear Text Search
    - DFA Text Search
  - Tries
    - Patricia Tree (Radix Tree)
  - Data Structures for Disjoint Sets
    - Disjoint-set operations
    - Linked-list representation of disjoint sets
    - Disjoint-set forests
      - Analysis of union by rank with path compression

#### **Knuth-Morris-Pratt Algorithm**

- https://en.wikipedia.org/wiki/Knuth–Morris–Pratt\_algorithm
- https://www.geeksforgeeks.org/kmp-algorithm-for-pattern-searching/
- https://www.javatpoint.com/daa-knuth-morris-pratt-algorithm
- https://www.educative.io/answers/what-is-the-knuth-morris-pratt-algorithm
- http://www.btechsmartclass.com/data\_structures/knuth-morris-prattalgorithm.html
- https://www-igm.univ-mlv.fr/~lecroq/string/node32.html#SECTION00320
- https://algs4.cs.princeton.edu/lectures/keynote/53SubstringSearch.pdf



#### **Horspool Algorithm**

- https://en.wikipedia.org/wiki/Boyer-Moore-Horspool\_algorithm
- https://www.inf.hs-flensburg.de/lang/algorithmen/pattern/horsen.htm
- https://www-igm.univ-mlv.fr/~lecroq/string/node18.html



#### **Boyer-Moore Algorithm**

- https://en.wikipedia.org/wiki/Boyer–Moore\_string-search\_algorithm
- https://www.geeksforgeeks.org/boyer-moore-algorithm-for-pattern-searching/?
   ref=gcse



#### **Brute-Force / Linear Text Search**

• https://algs4.cs.princeton.edu/lectures/keynote/53SubstringSearch.pdf



DFA (deterministic finite automaton) Text Search

• https://www.geeksforgeeks.org/finite-automata-algorithm-for-pattern-searching/



#### **Tries**

#### Patricia Tree (Radix Tree)

- https://en.wikipedia.org/wiki/Radix\_tree
- http://www.btechsmartclass.com/data\_structures/tries.html
- https://www.geeksforgeeks.org/implementing-patricia-trie-in-java/



#### **Data Structures for Disjoint Sets**

- https://ucoruh.github.io/ce100-algorithms-and-programming-II/week-10/ce100week-10-graphs/?h=disjoint#disjoint-set-operations
- Disjoint-set operations
- Linked-list representation of disjoint sets
- Disjoint-set forests
- Analysis of union by rank with path compression
- https://www.geeksforgeeks.org/disjoint-set-data-structures/
- https://www.javatpoint.com/disjoint-set-data-structure



$$End-Of-Week-12$$

