CS307P-SYSTEM PRACTICUM CPYNOT.

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What is CPYNOT ?

- It’s a plagiarism checker, designed to avoid copying of written text assignments for students studying in universities.

- **Plagiarism detection** is the process of locating instances of plagiarism within a work or document.*

Type -

- Documents’ Plagiarism checker –
  - Match two documents and give a measure of their closeness.
  - Use of algorithms such as Edit distance/String matching .

Functionality -

- Proposed plan –
  - Type -> Documents' Plagiarism checker
  - Take two documents and generate a measure of similarity.
  - Generate these measures for every pairs of documents and conclude the verdict for similar copies
  - Linking it to Moodle/Other Online File repositories.
  - Additional Feature - Application of different heuristics based on the type of document (e.g. an essay or program code in a specific language).

Comparison -

- A two tier comparison of documents –
  - 1) Generate dissimilarity measures by – Document distance approach.
  - 2) Generate dissimilarity measures by – comparing the strings/subsequences (Edit distance/Longest common subsequence).

Document distance -

- Document similarities are measured based on the content overlap between documents.

- Document as -
  - **Word** = sequence of alphanumeric characters
  - **Document** = sequence of words
    - – Ignore punctuation & formatting

Document distance -

- Distance ??
- Idea: focus on shared words
  - **Word frequencies:**
  – D(w) = number of occurrences of word w in doc D.

- Treat each document as a vector of its words
  – One coordinate for every possible word w.

Document distance -

- Similarity measure – Dot product between vectors.

$$D_1 \circ D_2 \equiv \sum_w D_1(w) \cdot D_2(w)$$

Document distance -

- Normalize by magnitude -

$$\frac{D_1 \circ D_2}{||D_1|| \cdot ||D_2||}$$

Compute angle between them-

$$\theta(D_1, D_2) = \text{acos}\left(\frac{D_1 \circ D_2}{||D_1|| \cdot ||D_2||}\right)$$

Problem with Document distance

- Does not takes into consideration the order of occurrence of words.

- Solution –
  - Weighted score with edit distance.

Edit distance

- Given two strings str1 and str2 and below operations that can performed on str1. Find minimum number of edits (operations) required to convert ‘str1′ into ‘str2′.
  - Insert
  - Remove
  - Replace
- Dynamic programming

Current progress -

- 15-20% of the total.
- Implemented document distance.
- Working fine, even with files of size ~50,000 words.

Future Modules -

- Parser – to parse the text file in alphanumerics only.
- Linking with moodle.