Case Study: Plagiarism Detection System

By Porwal Rushabh Rajesh

2022SP93034

2022-2YA

# Background:

ABC University is committed to maintaining academic integrity and ensuring that students submit original work. To address concerns about plagiarism, the university decides to develop a plagiarism detection system using the LCS method.

# Scenario:

The university collects a set of essays submitted by students for a particular assignment. The goal is to compare these essays and identify potential cases of plagiarism, where there are significant similarities between the textual content of two or more essays.

# Solution:

## Essay Collection and Preprocessing:

The university gathers the essays submitted by the students and prepares them for analysis. Each essay is represented as a string of text. The essays undergo preprocessing to remove punctuation, whitespace, and to standardize the text by converting it to lowercase. This ensures that the comparison is based solely on the textual content and reduces false matches.

## Implementing the LCS Algorithm:

A team of developers at the university implements the LCS algorithm in a plagiarism detection system. They create a function that takes two essays as input and calculates the length of the LCS between them. This function uses dynamic programming to efficiently find the LCS.

## Essay Comparison and Threshold:

The plagiarism detection system compares each essay with every other essay in the collection using the implemented LCS algorithm. The length of the LCS is calculated for each pair of essays. The university sets a plagiarism threshold, which represents the minimum length of the LCS required to consider two essays as potentially plagiarized. For example, a threshold of 50% means that if the LCS length between two essays exceeds 50% of the longer essay's length, it is flagged as potentially plagiarized.

## Identifying Potential Plagiarism Cases:

Based on the calculated LCS lengths, the plagiarism detection system identifies potential cases of plagiarism. Pairs of essays that exceed the defined threshold are flagged as potential plagiarism cases. The system generates a report that lists these pairs, indicating the essays involved and the percentage of overlap.

## Manual Investigation and Actions:

The university initiates a manual investigation of the potential plagiarism cases identified by the system. Faculty members or designated personnel thoroughly review the flagged essays to validate the similarities and ensure the presence of actual plagiarism. They may use additional tools or techniques to gather more evidence if needed. Based on the investigation's findings and the university's policies, appropriate actions are taken, which may include issuing warnings, imposing penalties, or initiating disciplinary procedures.

## Continuous Improvement and Education:

The university constantly improves its plagiarism detection system by incorporating feedback, refining the algorithms, and keeping up with advancements in the field. Additionally, the university emphasizes educating students about academic integrity and the consequences of plagiarism. Workshops, guidelines, and resources are provided to ensure that students understand and adhere to ethical standards in their academic work.

# Results:

By implementing the plagiarism detection system based on the LCS method, ABC University successfully detects potential cases of plagiarism among student essays. This helps maintain academic integrity, promotes originality, and ensures a fair evaluation of student performance.

The plagiarism detection system serves as a deterrent, raising awareness about the consequences of plagiarism and encouraging students to submit original work. It creates a culture of academic honesty, where students understand the importance of producing their own ideas and properly attributing external sources.

Overall, the LCS-based plagiarism detection system contributes to upholding the reputation and credibility of ABC University as an institution committed to academic excellence and integrity.