PLAGIARISM DETECTION AND REPORTING SYSTEM

A proposal for the COEP Technological University Hackathon by Team V6

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**A Unitary Public University of Govt. of Maharashtra
Formerly College of Engineering Pune**

PLAGIARISM DETECTION AND REPORTING SYSTEM (PDRS)

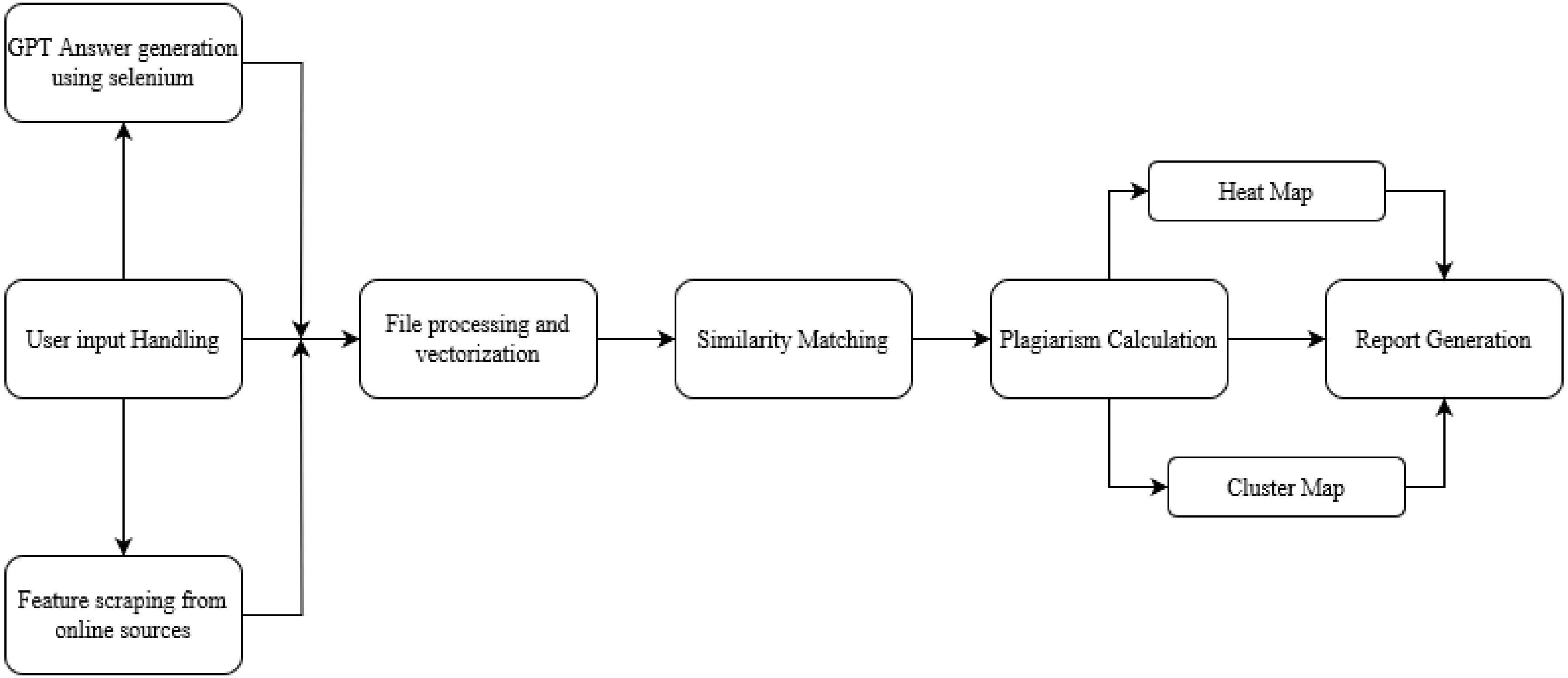
Approach with respect to the Problem Statement

- PDRS is designed to detect plagiarism in a large volume of files submitted to it on top of a pre-existing database
- Capable of cross-referencing a batch of files within themselves for plagiarism but also references them against several online sources
- It provides a comprehensive report to a user which is customizable and save-able for future references

Tech Stack Overview

- Flask: Lightweight web framework for building scalable web applications.
- SQLAlchemy: Python SQL toolkit and Object-Relational Mapping (ORM) library for database management.
- HTML-CSS: Markup and styling languages for creating structured and visually appealing web pages.
- JavaScript: Versatile scripting language for adding interactivity and dynamic content to web applications.
- Python: High-level programming language known for its simplicity and versatility, used for backend logic and effective file processing tasks
- Selenium: A robust automated testing framework, augments our tech stack, enabling us to bypass OpenAI API

Implementation and Algorithm Design


GPT Answer generation using selenium
User input Handling
Feature scraping from online sources
File processing and vectorization
Similarity Matching
Plagiarism Calculation
Heat Map
Cluster Map
Report Generation

Algorithm for better Plagiarism Calculation

- Our algorithm is a self developed algorithm largely based on Cosine Similarity
- It improves upon the effectiveness of calculating Cosine Similarity between two vectors by including multiple words (bigrams) for a single value in the Term Frequency – Inverse Document Frequency calculation
- TF-IDF Vectorization helps us to understand the relevance of a document’s feature words relative to the whole corpus
- By including bigrams we can identify semantic relationships between words and identify important phrases in documents

$$w_{x,y} = tf_{x,y} \times \log\left(\frac{N}{df_x}\right)$$

TF-IDF

Term x within document y

$tf_{x,y}$ = frequency of x in y

df_x = number of documents containing x

N = total number of documents

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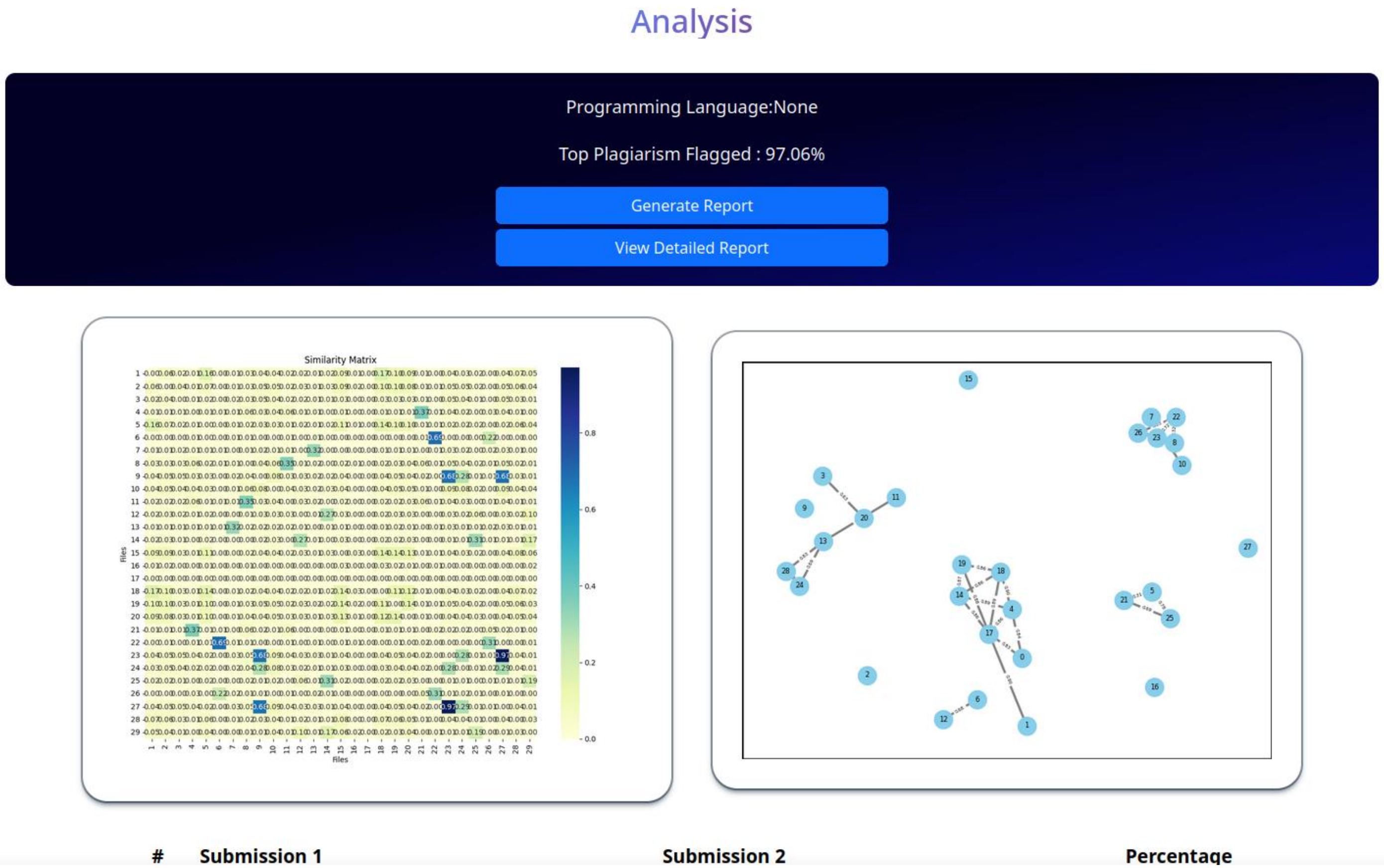
UI Design and Functionality



Analysis

Programming Language:None

Top Plagiarism Flagged : 97.06%

#	Submission 1	Submission 2	Percentage

Report Generation

- We have taken major strides to enable easy identification of plagiarism once the corpus has been processed
- Key visual aids are a heatmap correlation matrix, a cluster plot and 1:1 comparison between a pair of documents
- These aids combined with a readily available comprehensive report on the dashboard enable the user to quickly identify and