Descriptive Answer Evaluation using NLP

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Overview

- The COVID-19 pandemic has made a severe impact on education system.The face to face lectures attending has replaced with online learning.
- These closures affected the examination system as well. Answering mechanisms have become less descriptive to adapt newer modes of evaluation thus an automated system for evaluation of descriptive answers is required.
- Introduces a mechanism for automated scoring/grading the descriptive answers for the students. It applies efficient Natural Language Processing (NLP) and Deep Learning (DL) techniques to provide a helping hand to teachers in educational sector.

Existing System

- The current descriptive exam evaluation system is done by the teachers manually.
- It is very time consuming process.and also having lot of manpower.
- Evaluation also depends on the knowledge,mood,work pressure of the evaluator.

Proposed System

- The online descriptive exams is evaluated by the computer using NLP.
- The computer takes the answer key of the exam and checks the similarity of the answer and gives appropriate mark.
- The mark is given by using the answer key provided,length of the answer,grammar of the sentences.
- More suitable for science subjects.
- It is done in minimal time and saves lot of manpower.
- The awarded mark will be accurate and precise.

Literature Survey

Title	Methodologies Used	Analysis
An Examination System Automation Using NLP. (Bharat Sharma,Indrashis Das),2019 IEEE	By applying keyword matching,0/1 vectors are formed for answer and compared by cosine similarity	As either 0 or 1 is assigned while comparing,there is no provision of partial keyword matching
Grading Descriptive Answer Scripts Using Deep Learning,2019	Using LSTM RNN to predict the score.	Less accurate when compared to the actual mark.

Natural Language Processing

- Natural language processing (NLP) is the ability of a computer program to understand human language as it is spoken and written.
- It is a component of artificial intelligence.
- There are two main phases to natural language processing: data processing and algorithm development.

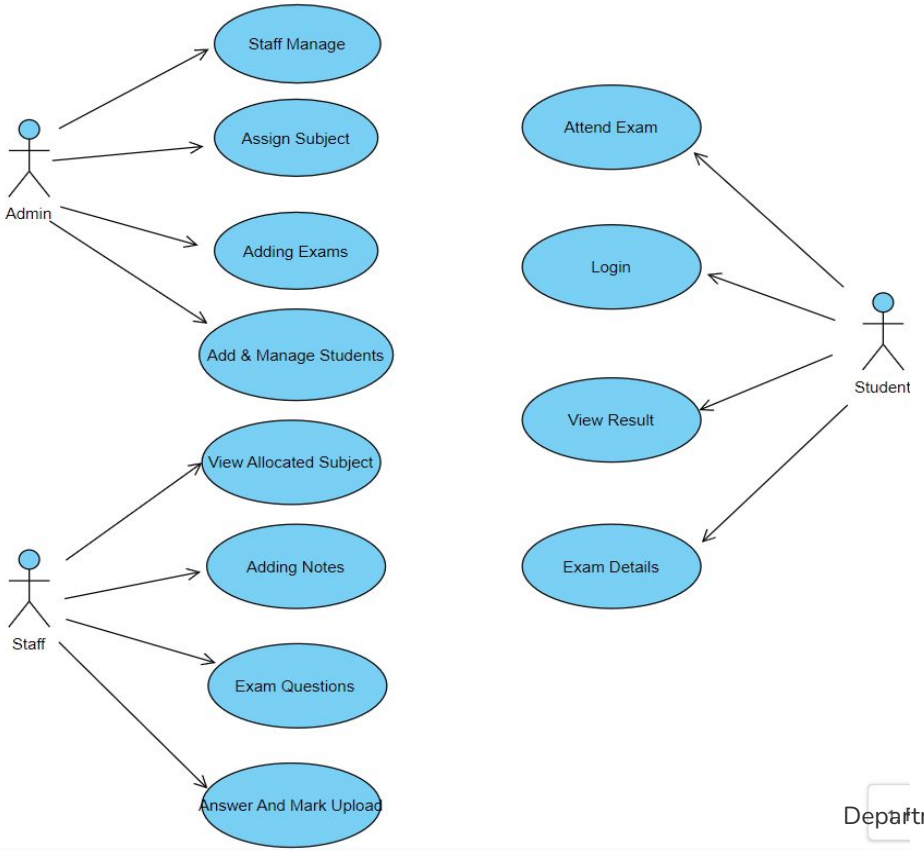
NLP Strategies

A. Keyword and Similarity Score

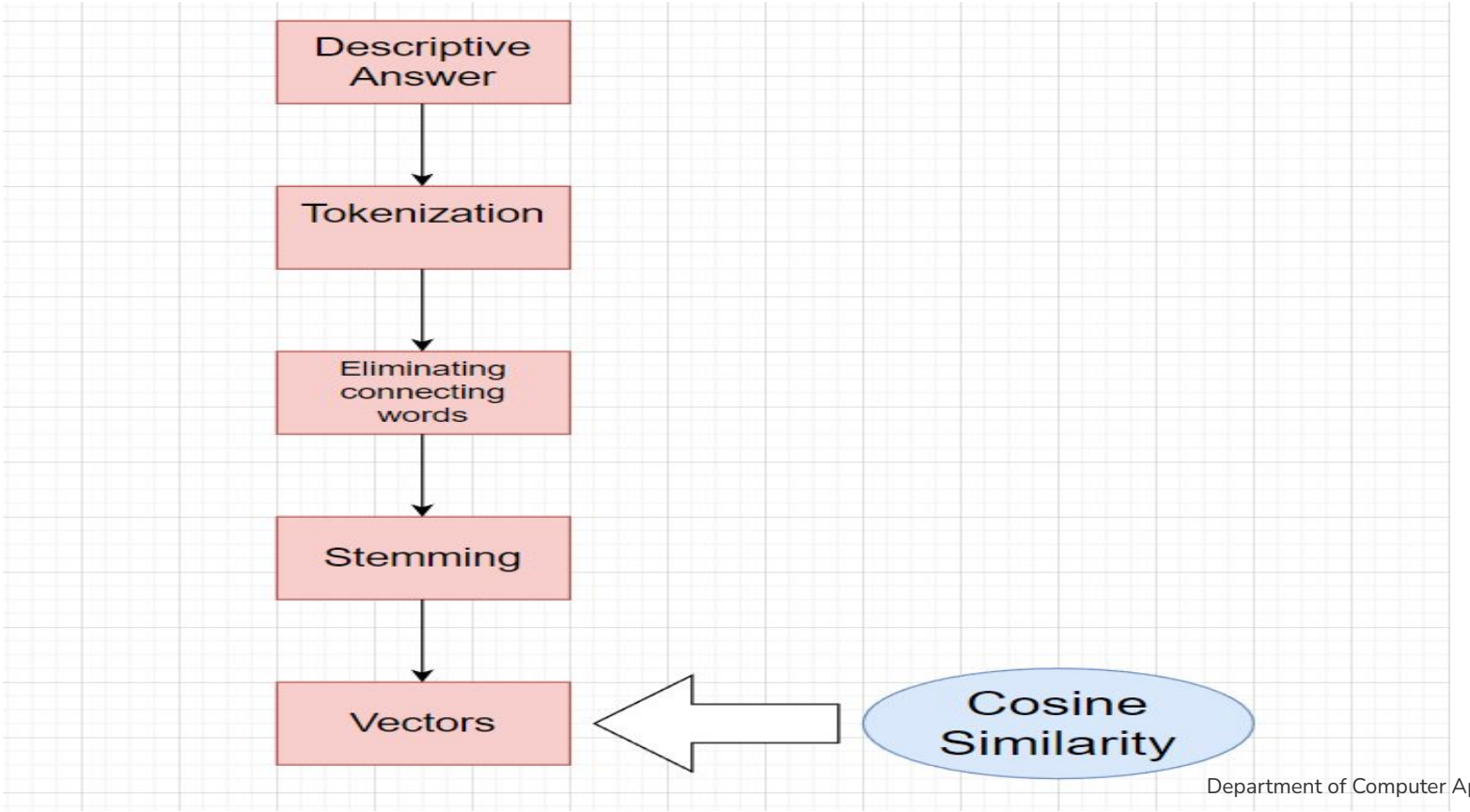
B. Language score

C. Fuzzy String matching Score

Use Case Diagram



WorkFlow Diagram



Technologies Used

- Front End : HTML with Python Flask, Android
- Back End : Mysql
- NLP: Python nltk

Future scope

- Include more security parameters to increase the integrity of exams.
- Develop the system as which is suitable for arts subjects also.
- Develope the NLP program to read the handwritten answers given by the students.

Conclusion

- Descriptive answer evaluation is more efficient using NLP.
- The system accept the answer from the student for a particular question given by the staff.
- Also the answer is compared with the correct answer given by the staff and gives the appropriate mark to the student.
- The result will be published for the student as well as staff.
- The system also deals with features like sample question paper upload,Notes upload.

References

- An Intelligent System for Evaluation of Descriptive Answers

  (Vinal Bagaria,Mohit Badve),2020 IEEE

- An Examination System Automation Using NLP.

  (Bharat Sharma,Indrashis Das),2019 IEEE

Thank You