**Literature Survey**

Numerous endeavors have been made by data experts and researchers in the field of grading subjective answers. Few of them that were helpful during our research are:

In the paper **Automated Template Generation for Question Answering over Knowledge Graphs**, templates are an important asset for question answering over knowledge graphs, simplifying the semantic parsing of input utterances and generating structured queries for interpretable answers. State of-the-art methods rely on hand-crafted templates with limited coverage. This paper presents QUINT, a system that automatically learns utterance-query templates solely from user questions paired with their answers. Additionally, QUINT is able to harness language compositionality for answering complex questions without having any templates for the entire question. Experiments with different benchmarks demonstrate the high quality of QUINT.

In the paper **Evaluating Student Descriptive Answers Using Natural Language Processing** (International Journal of Engineering Research & Technology (IJERT) IJERT ISSN: 2278-0181)**,** Computer Assisted Assessment of free-text answers has established a great deal of work during the last years due to the need of evaluating the deep understanding of the lessons’ concepts that, according to most educators and researchers, cannot be done by simple MCQ testing. In this paper they have reviewed the techniques underpinned this system, the description of currently available systems for marking short free text response and finally proposed a system that would evaluate the descriptive type answers using Natural Language Processing.

In the paper **Learning to Grade Short Answer Questions using Semantic Similarity Measures and Dependency Graph Alignments,** In this work the task of computer assisted assessment of short student answers is being addressed. Several graph alignment features with lexical semantic similarity measures using machine learning techniques are combined and show that the student answers can be more accurately graded than if the semantic measures were used in isolation. A first attempt to align the dependency graphs of the student and the instructor answers is presented in order to make use of a structural component in the automatic grading of student answers.

In the paper **Automatic short answer grading and feedback using text mining method** (Post proceedings of the 10th Annual International Conference on Biologically Inspired Cognitive) In this paper, the focus is on the concept of automatic grading of short answer questions and providing useful feedback on the answers to students. Experimental results on a dataset provided from the introductory computer science class in the University of North Texas are presented. Firstly, standard data mining techniques to the corpus of student answers are applied for the purpose of measuring similarity between the student answers and the model answer. This is based on the number of common words. Then the relation between these similarities and marks awarded by scorers are evaluated. Then an approach is considered which groups student answers into clusters. Each cluster would be awarded the same mark, and the same feedback given to each answer in a cluster. In this manner, it is demonstrated that clusters indicate the groups of students who are awarded the same or the similar scores. Words in each cluster are compared to show that clusters are constructed based on how many and which words of the model answer have been used. The main novelty in this paper is to design a model to predict marks based on the similarities between the student answers and the model answer.