Lokmanya Tilak College of Engineering, Navi Mumbai

Computer Engineering

Major Project-II
Presentation -I
B.E. (Computer) Sem - VIII

2022-23

CheckMyAnswer

Group members:

Pooja Bhagat	BEA-110
Priyanka Korde	BEA-113
Asmit Patil	BEA-131
Raghuwardayal Maurya	BEA-152

Name of Project Guide:

Prof. Rajendra Gawali

Presentation Outline

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Abstract

- It has been observed that a wide range of students applied for different kinds of exams, including institutional, non-institutional, and occasionally even competitive ones.
- When dealing with multiple-choice questions automated scoring is applied.
- We are still having difficulties automating scoring for subjective papers.
- Designing an algorithm to automate answer evaluation is the major objective of project.

Introduction

- An CheckMyAnswer is a machine learning tool designed to assess the subjective answers.
- On average, each institute has six examinations per year, resulting in more than 6.4 million answer sheets being generated.
- CheckMyAnswer is used to grade the student after he or she has completed the answer paper.
- The process of evaluating the descriptive answer will save time.

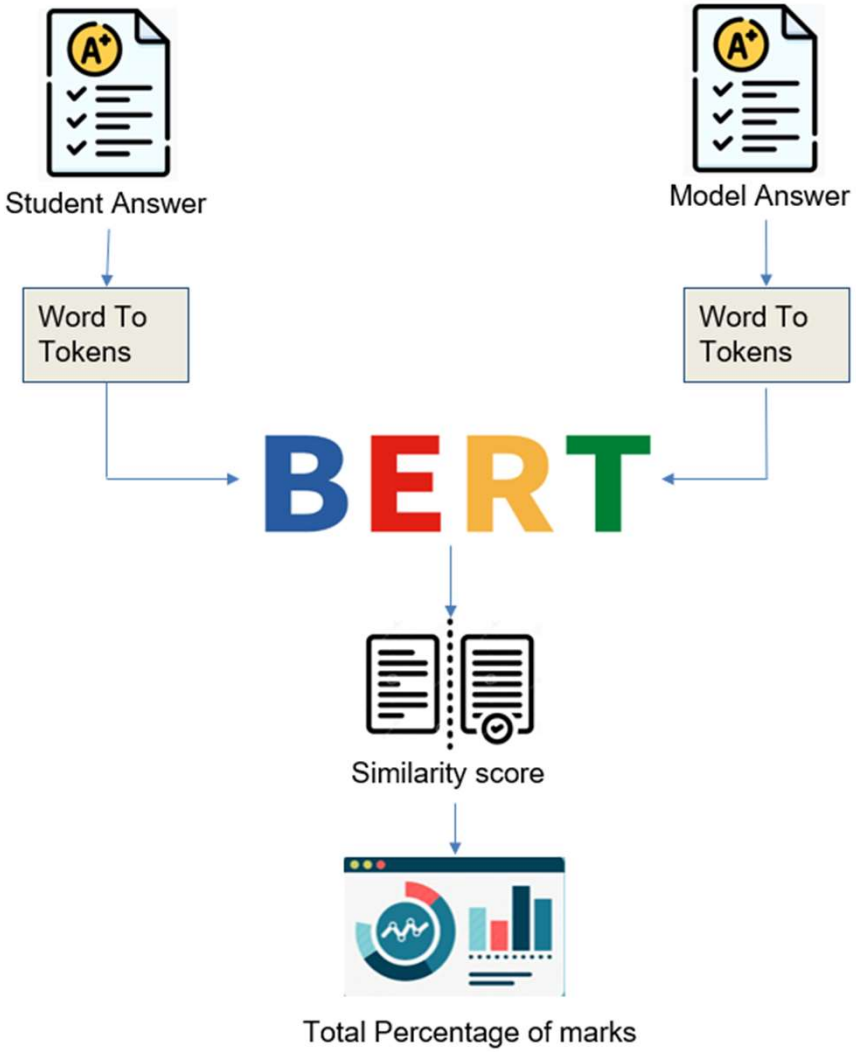
Literature Survey

Sr. No.	Authors	Title of the paper & year of publication
1.	Ashutosh Shinde, Nishit Nirbhavane, Sharda Mahajan, Vikas Katkar, Supriya Chaudhary	Ai Answer Verifier 2018
2.	Jagadamba G, And Chaya Shree G	Online Subjective answer verifying system Using Artificial Intelligence 2020
3.	Muhammad Farrukh Bashir, Hamza Arshad, Abdul Rehman Javed Natalia Kryvinska And Shahab S. Band	Subjective Answers Evaluation Using Machine Learning And Natural Language Processing 2021
4.	Ronika Shrestha, Raj Gupta and Priya Kumari	Automatic AnswerSheet Checker 2022

Problem definition

Traditional methods of grading and assessment can be time-consuming, prone to human error. As a result, organizations may struggle to accurately assess the answers provided by students, leading to false evaluation performance. CheckMyAnswer provide a solution by automating the evaluation process.

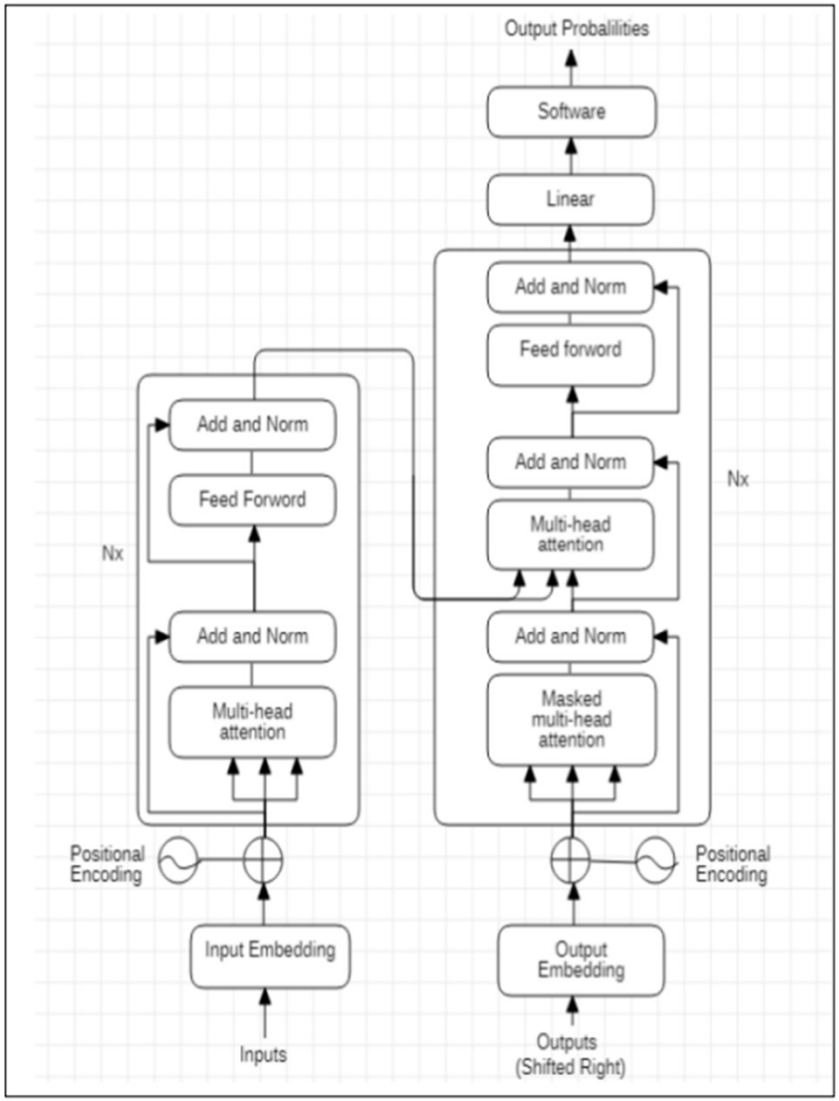
Design details



Algorithms

TRANSFORMER:

- Encoder
- Decoder
- Multi-head attention
- Positional Encoding



Algorithms

- BERT (Bidirectional Encoder Representations from Transformers) is a pre-trained language model that can be fine-tuned to solve specific problem.
- BERT consists of multiple layers of transformers, with a total of 12 layers in the base model and 24 layers in the large model.
- It capture both the meaning of the token and its relationships with other tokens in the sequence.
- It can be fine-tuned on a specific task, such as text question-answering, by adding task-specific layers on top of the pre-trained BERT model.

Hardware & Software details

HARDWARE DETAILS:

CPU Processor: i3 10 generation

RAM: 4GB

Operating System: Linux, Windows, Mac

Graphics: NVIDIA GeForce GTX 1650

Operating System Architecture: 64 bits

LIBRARIES DETAILS:

Python Version 3.9

Numpy

Pandas

Keras

Tensorflow

SOFTWARE DETAILS:

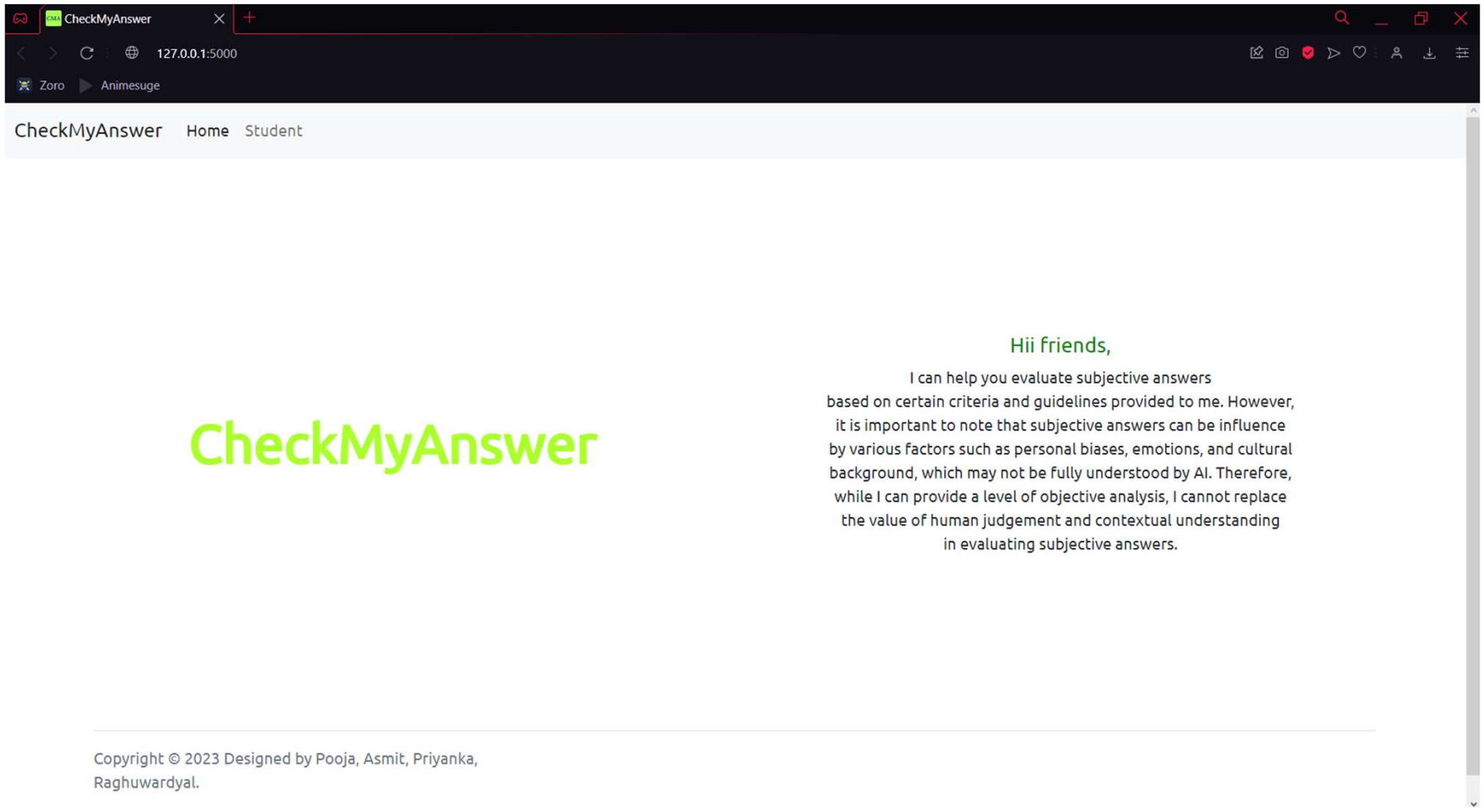
Google Colaboratory

Navigator Anaconda version 3

Visual Studio Code version 2019

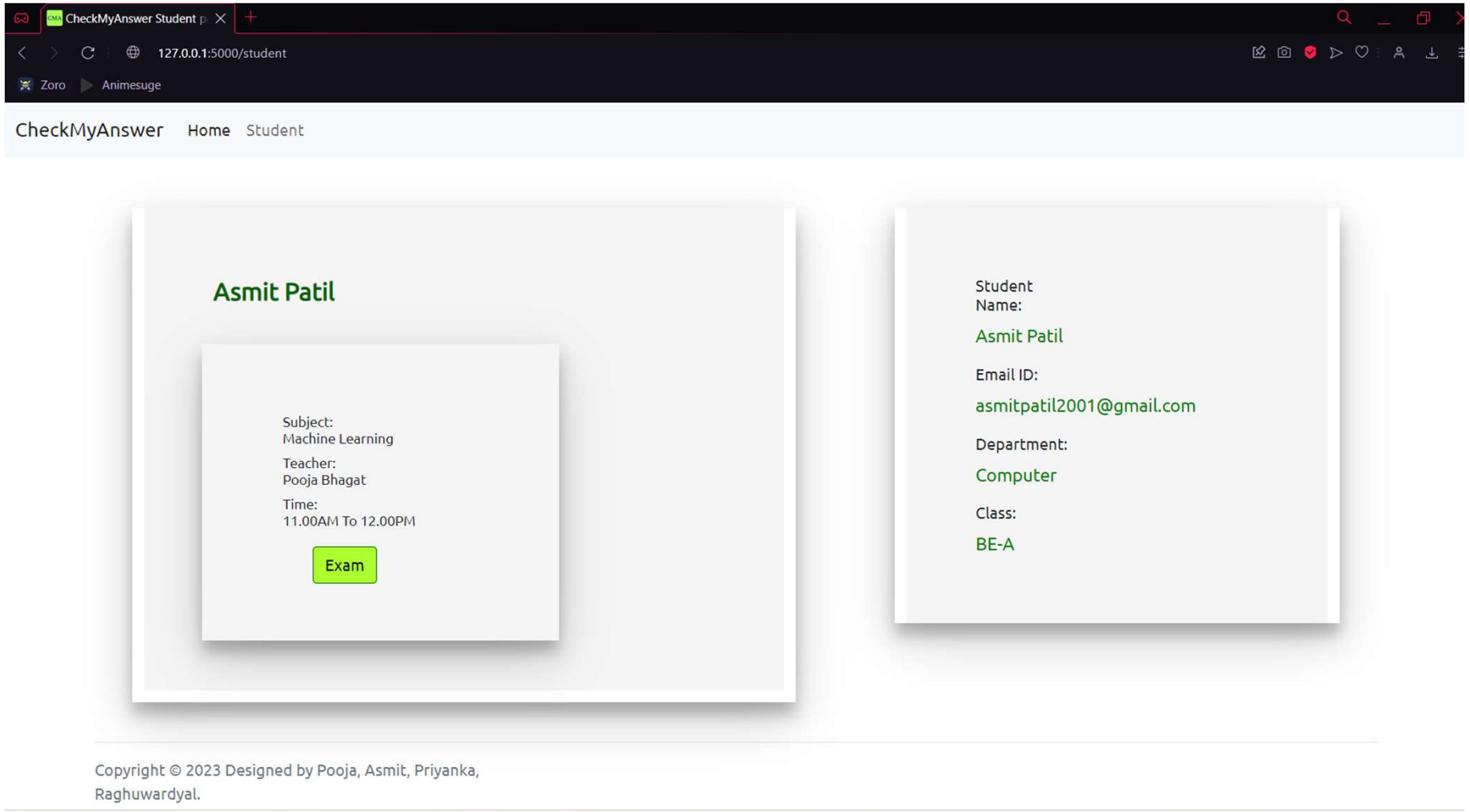
Results

Home Page of Website:



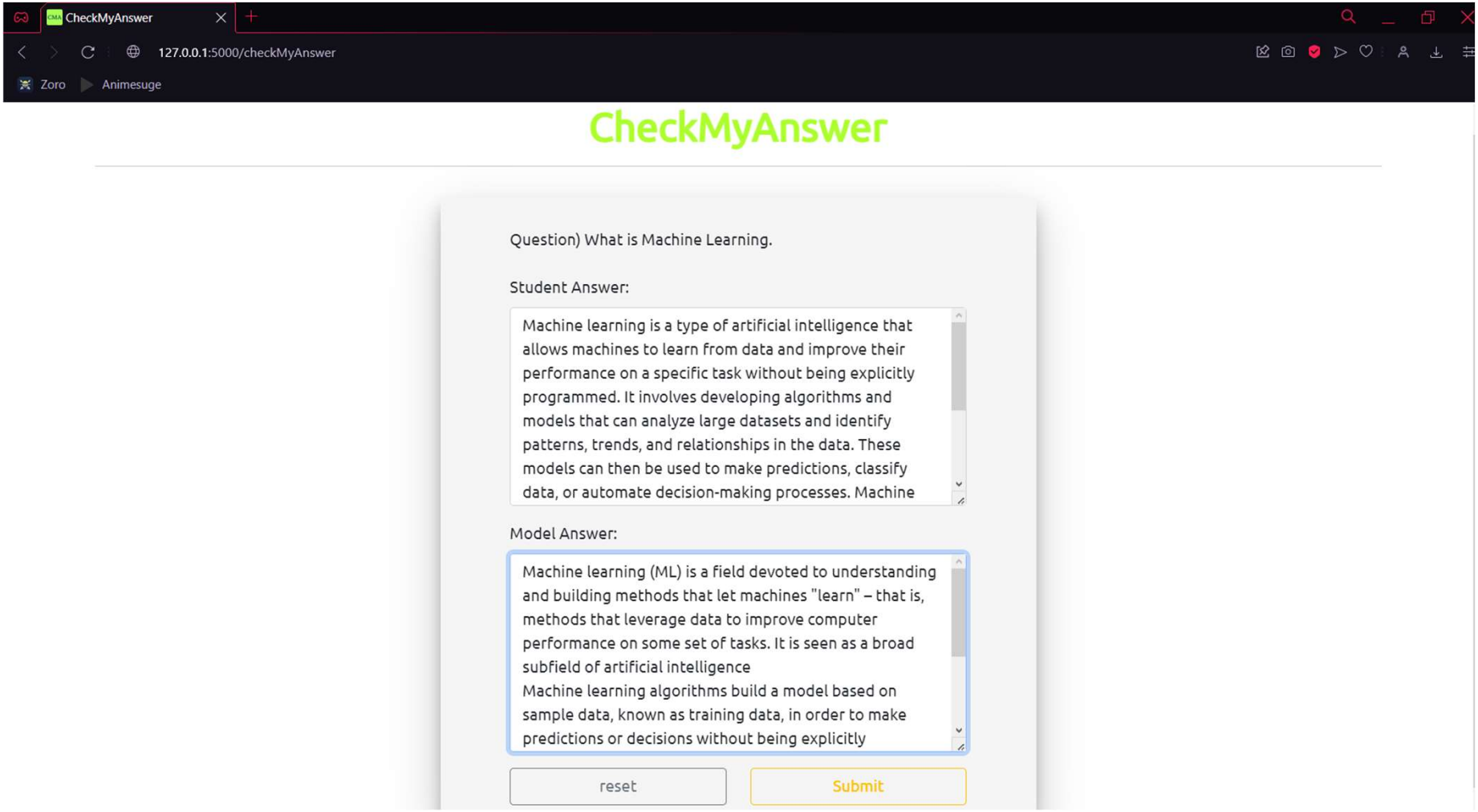
Results

Student Page of Website:



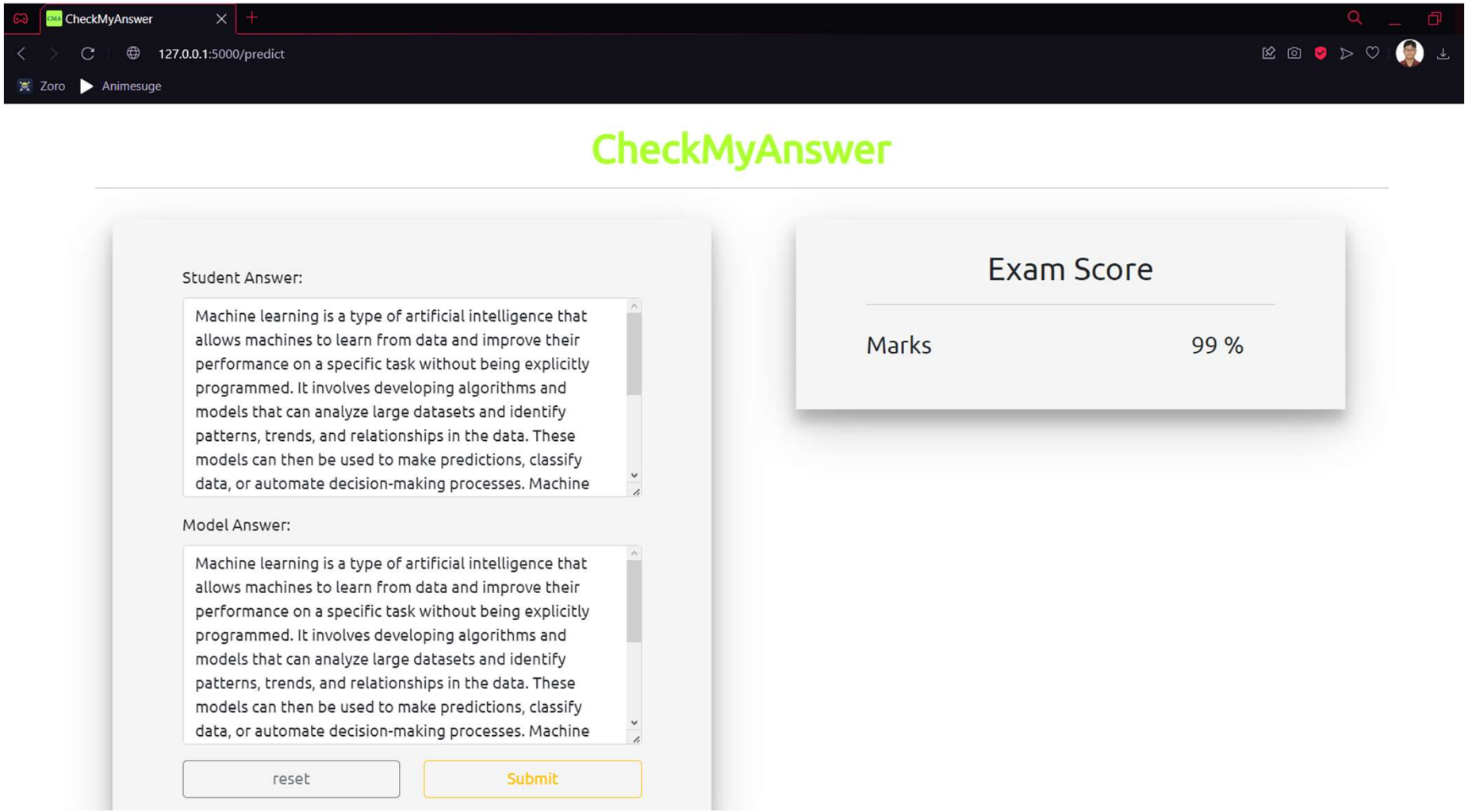
Results

Exam Page of Website:



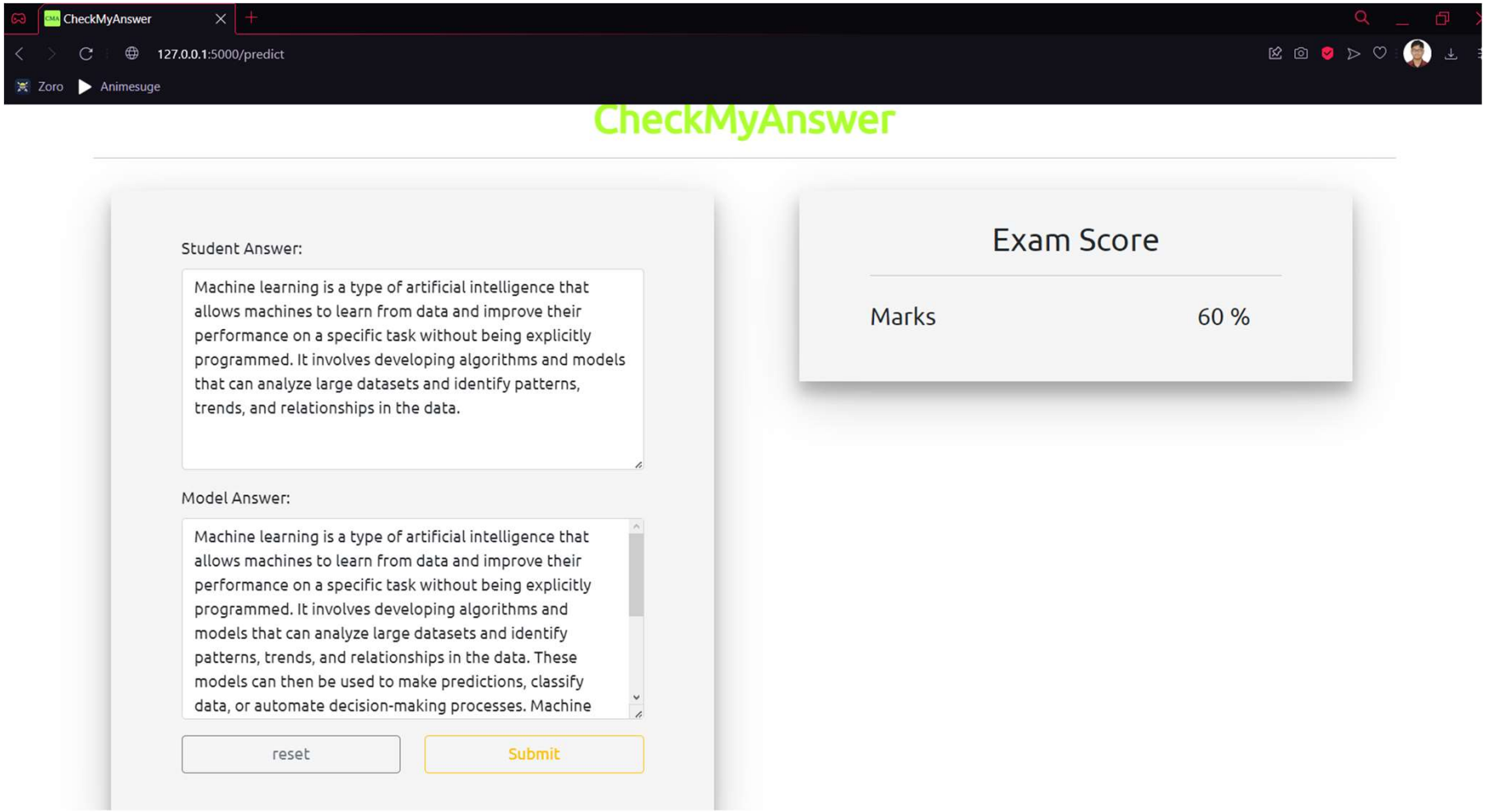
Results

Result page of website: When answer by student and teacher is similar.



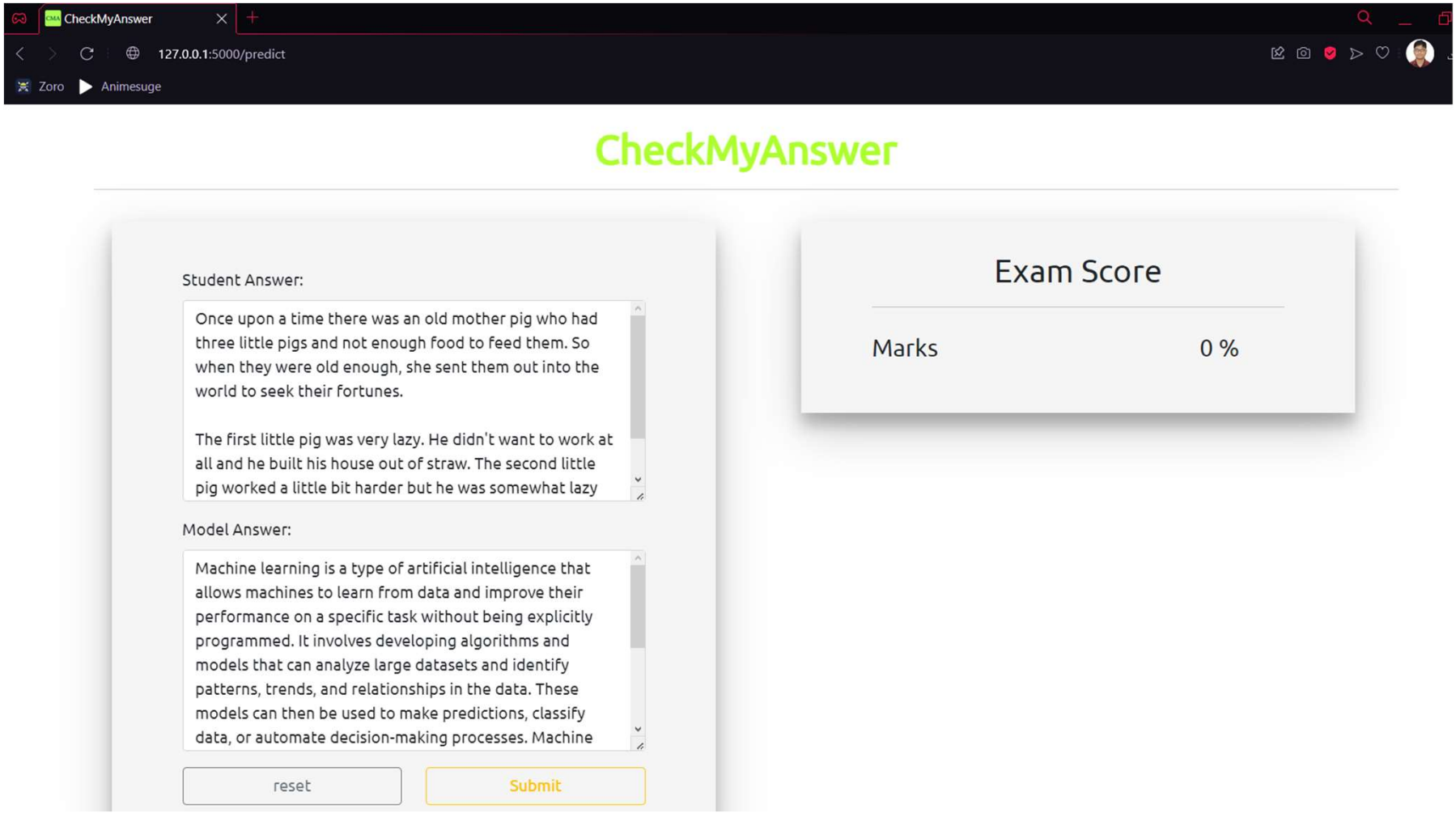
Results

Results page of website: When answer by student is correct but wordings are different than teacher's answer.



Results

Results page of website: When answer by student is wrong and doesn't match to teacher answer.



Conclusion

- CheckMyAnswer is which eases the role of evaluators and provides faster and more efficient outputs.
- The system evaluates the answer based on the keywords by judging against the model answer and the student's answer marks are allocated to the student.
- This will reduce manual work and saves time with faster result evaluation.
- Hence implemented transformer algorithm using BERT and deployed model using flask as backend & frontend using HTML/CSS.

Future Scope

- In the future we are planning to evaluate subjective answers by text extraction from image of student answer with diagrams and mathematical expressions.
- The current system only evaluates answers written in English. Further it can be extended to evaluate answers written in other languages also.

References

- Johri, Era and Dedhia, Nidhi and Bohra, Kunal and Chandak, Prem and Adhikari, Hunain, ASSESS - Automated Subjective Answer Evaluation Using Semantic Learning (May 7, 2021). Proceedings of the 4th International Conference on Advances in Science & (ICAST2021).

- G. Jagadamba and C. Shree G., "Online Subjective answer verifying system Using Artificial Intelligence," 2020 Fourth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), Palladam, India, 2020, pp. 1023-1027.

- "Automated Essay Grading Using Machine Learning" by A. Singh et al. (2015), which describes a machine learning approach to grading essays.

- "A Review of Automated Essay Scoring" by E. Attali and J.Burstein (2011), which provides an overview of the field of AI subjective Answer Checker s, including their history, current state, and future potential.

Thank You!