



Smart Internz

Internship Project report on
IBM WatsonStudio For Building An Automated Essay Grading System

Submitted By:

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ACADEMIC YEAR:2021-2022

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CHAPTER 1

INTRODUCTION

1.1 Overview

Essays are crucial testing tools for assessing academic achievement, integration of ideas and ability to recall, but are expensive and time-consuming to grade manually. Manual grading of essays takes up an amount of instructors' valuable time and hence is an expensive process. Automated grading, if proven to match or exceed the reliability of human graders, will reduce costs. Currently, automated grading is used instead of second graders in some high-stakes applications, and as the only grading scheme in low stakes evaluation. This application can have a high utility in many places. For instance, currently, evaluation of essay writing sections in exams like GRE, GMAT, and TOEFL is done manually. And, so automating such a system may prove to be highly useful. An automated grading system is built with the magical powers of neural networks. Using automation reduces time and effort in evaluation. NLTK libraries for feature extraction and LSTM are used for the learning process.

Project Objectives:

- i. You'll be able to understand the text and process it.
- ii. You will be able to extract important features from the text.
- iii. You will be able to understand RNN and LSTM working principles.
- iv. You will be able to know how to pre-process/clean the text using different data pre-processing techniques.
- v. You will be able to know how to find the accuracy of the model.
- vi. You will be able to build web applications using the Flask.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING SYSTEM

Automated Essay Grading (AEG) or scoring systems are not more a myth they are reality. These AI systems are blessings to the educational community where teachers normally face lots of problem while correcting students' essays. Valuation of huge amount of student essays within stipulated time frame, with feedback is a real challenge. But today, the human written (not hand written) essays easily evaluated by AEG systems easily. The TOEFL exam is one of the best examples of this application.

2.2 PROPOSED SYSTEM

It has been found that most of the popular AEG systems are made to grade English essays and they are easy to follow. Systems developed in non-English languages are not popular and not understandable for everyone. Our research shows that while a system grades an English essay it considers the influence of local languages as error. Hence the two sentences will show error once they are evaluated by machine as well as by English spoken man.

CHAPTER 3

THEORETICAL ANALYSIS

3.1 BLOCK DIAGRAM

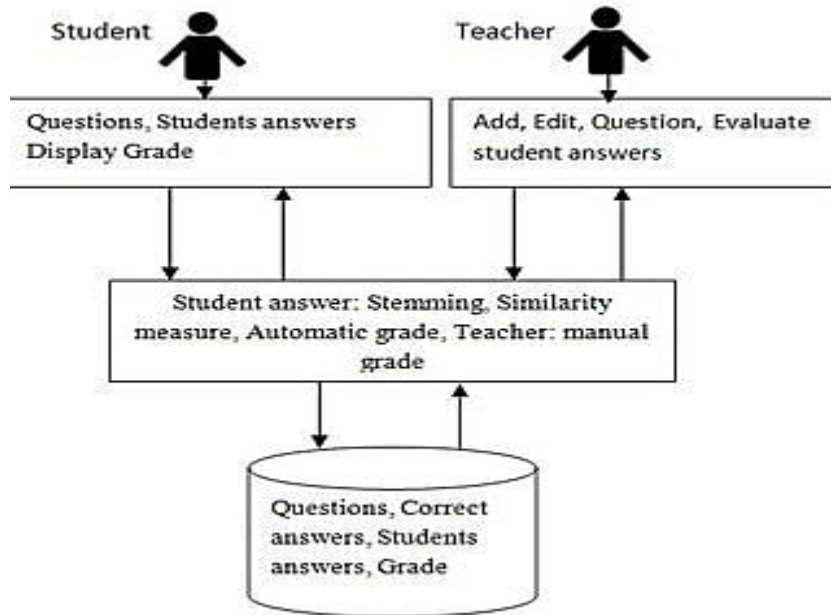


Figure 3.1.1: Block Diagram of Project

3.2 HARDWARE AND SOFTWARE DESIGNING

HARDWARE DESIGNING:

The hardware required for the development of this project is:

1. Processor : Intel® Core™ i5-9300H
2. Processor speed: 2.4GHz
3. RAM Size: 8 GB DDR
4. System Type : X64-based processor

SOFTWARE DESIGNING:

The software required for the development of this project is:

5. Desktop GUI: Anaconda Navigator
6. Operating System : Windows 10 (and other higher version)
7. Front end: HTML, CSS, JAVASCRIPT
8. Programming Language : PYTHON

CHAPTER 4

EXPERIMENTAL ANALYSIS

4.1 Pre-Process The Data:

In this milestone, we will be preprocessing the dataset that is collected.

Preprocessing includes:

- i. Handling null values and dimensionality reduction.
- ii. Processing the text and vectorizing.
- iii. Identify the dependent and independent variables.
- iv. Split the dataset into train and test sets.

Python Flask:

Flask is a micro web framework written in Python. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools. Flask is used for the backend, but it makes use of a templating language called Jinja2 which is used to create HTML, XML or other markup formats that are returned to the user via an HTTP request. Flask offers a diversified working style while Django offers a Monolithic working style. It is designed as a web framework for RESTful API.

development

CHAPTER 5

FLOWCHART

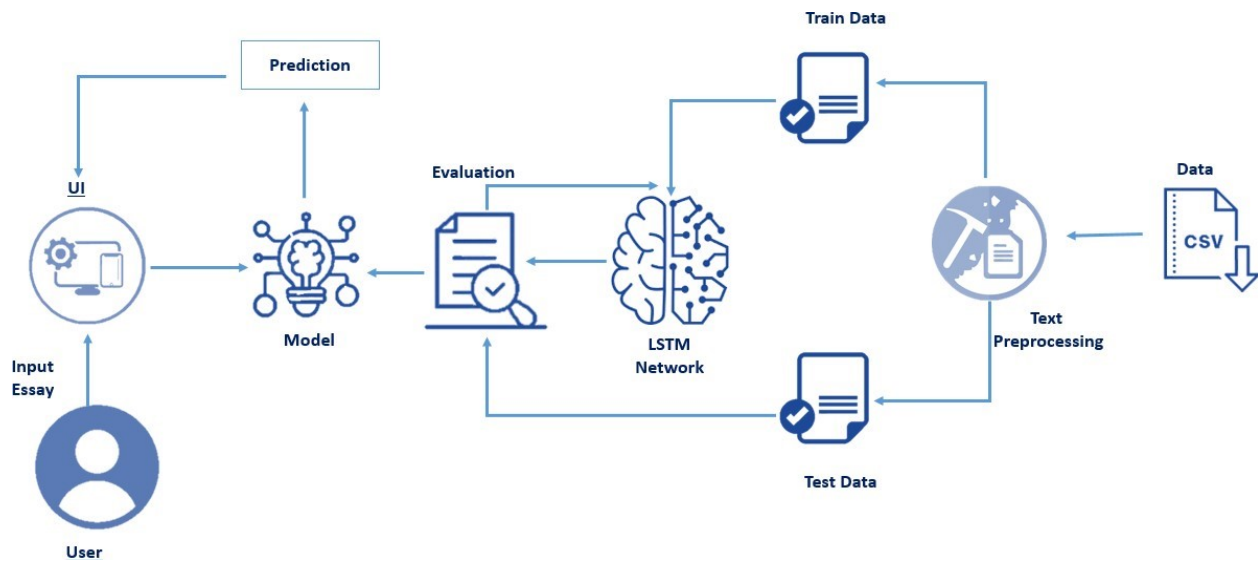


Figure 5.1: Flowchart of the Project

Project Flow:

Find below the project flow to be followed while developing the project.

1. Download the dataset.
2. Preprocess the textual data.
3. Classify the dataset into train and test sets.
4. Add the neural network layers.
5. Load the trained data and fit the model.
6. Test the model.
7. Save the model and its dependencies.
8. Build a Web application using flask that integrates with the model built.

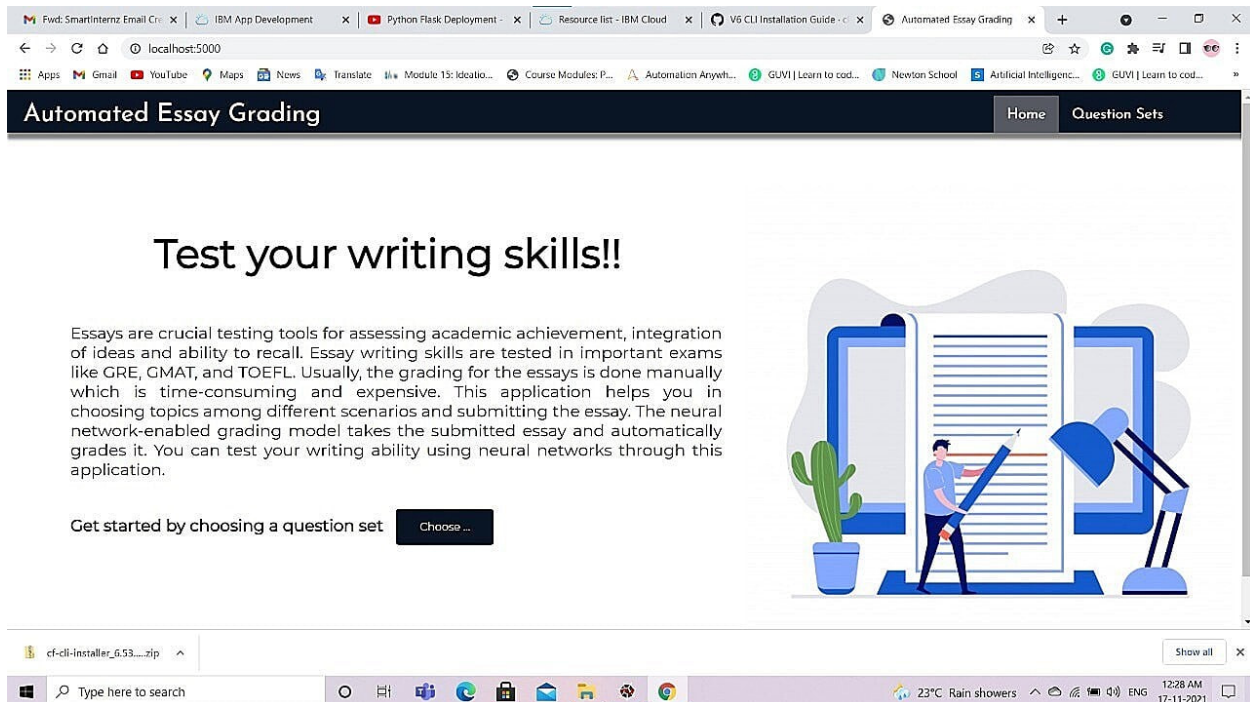


Fig 1: home page

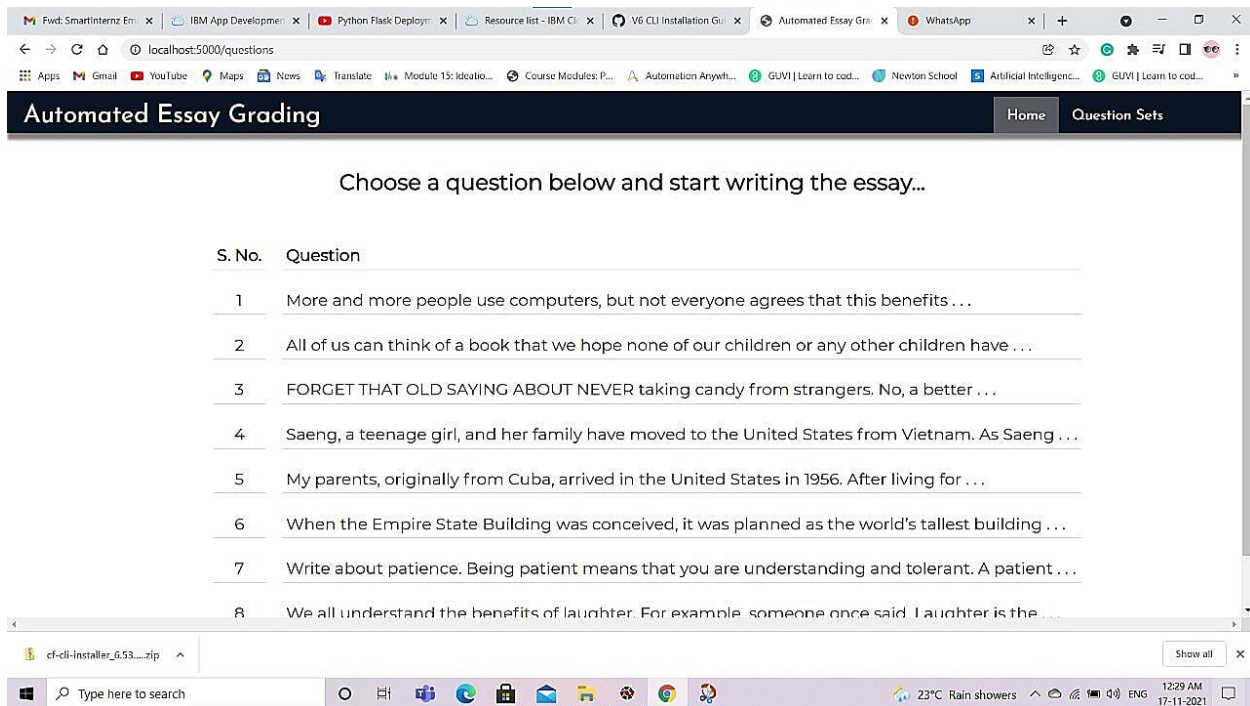


Fig 2: Questions page of project

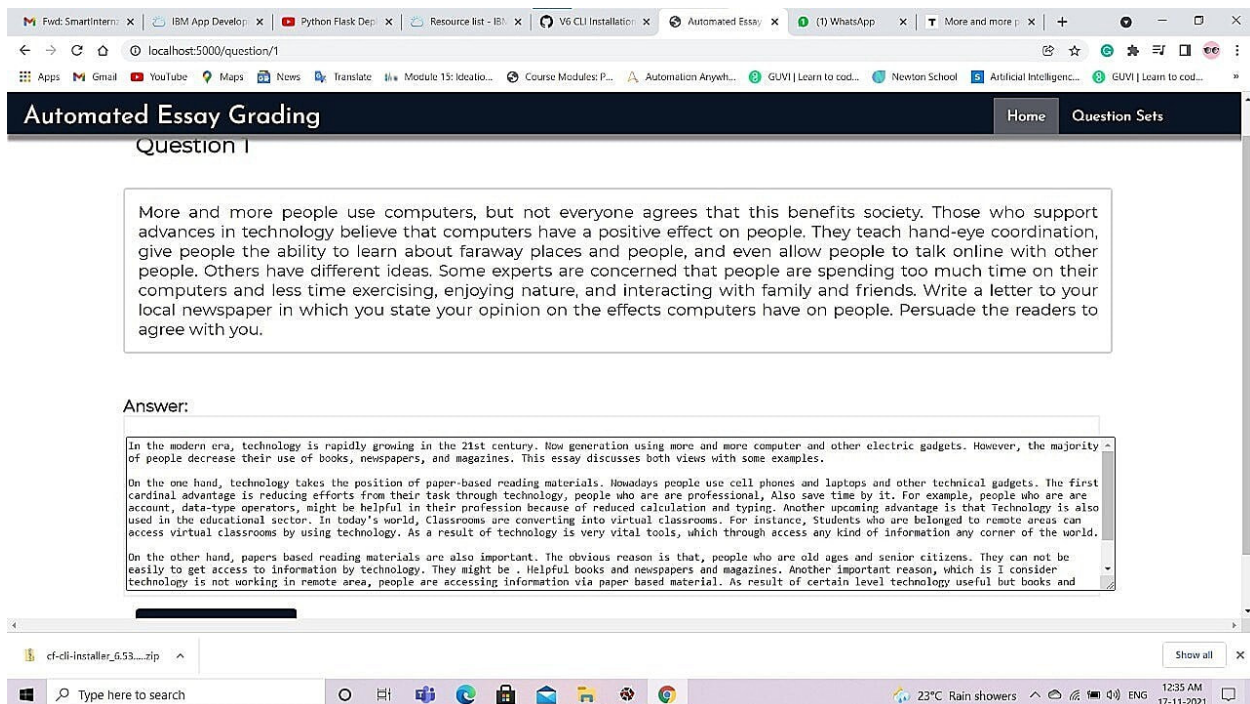


Fig 3: Answer page of this project

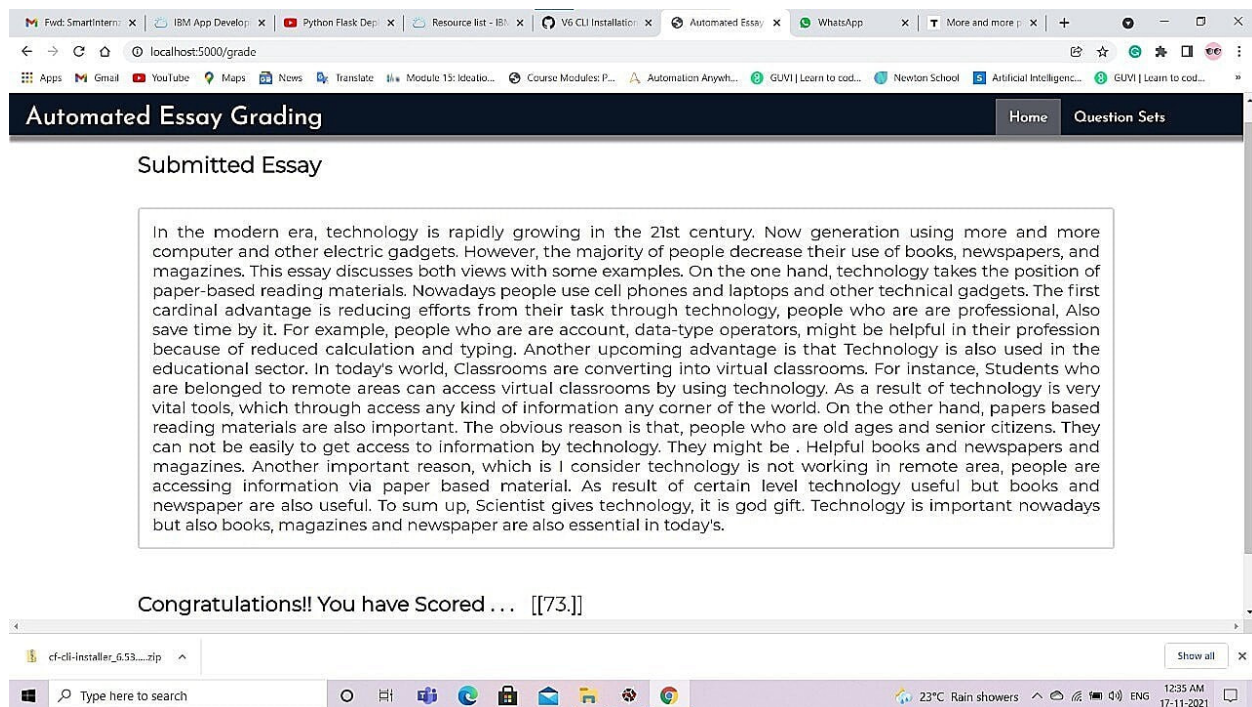


Fig 4: Submission page

Advantages and disadvantages

The advantages of automated essay scoring are plain to see. It would ease teacher workloads, decrease testing costs, and allow more standardized testing to shift away from the easily scored, though narrowly focused, multiple choice format. But the unfortunate truth is that our level of technology just isn't there. True artificial intelligence is still a dream of the future rather than a tool for the present.

the disadvantages of using the automated software testing tools in the software testing. One of the disadvantages is that the automated software testing tools is no human insight, in other words, it is lack of human perspective. For example, an automated tool may not identify missing heading tags since it cannot read the content.

Another example is although a testing tool can detect ALT attributes for graphics, it cannot determine if the attributes are descriptive enough. The same applies to frame titles and field labels. Only a human tester can provide feedback on these

issues.

Applications:

Automated essay scoring(AES) is the use of specialized computerprograms to assigngrades to essays writtenin an educational setting. Its objectiveis to classifya largeset of textualentities into a small number of discretecategories, corresponding to thepossible grades, for example, the numbers 1 to 6.

CONCLUSION

Despite of its imperfection, AES can greatly promote the practice of college English writing and curriculum reform if used properly. It frees teachers for other constructive and advancedwork. Meanwhile, its instantand intelligent feedbackhelps students improve their writingconsiderably. To minimizeits drawbacks, the author suggeststhe following measuresbe taken in the application of AES:

1. Increase the online peer-review process. Divide the students into groups and add peer review. The introduction of student mutual evaluation can make up for the lack of

AES's appreciation of the essentials of effective writing. Speaking of peer review, althoughPigai provides this feature,it cannot save group setting,where students can be assignedto certain groups accordingto their English level and help each other throughout the writing course. With each essay assigned,the teacher has to manuallyassign the reviewersor randomlyassign reviewers, which is quite

inconvenient and inefficient for group study.

Future scope

Text categorization is the problem of assigning predefined categories to free text document. The idea of automated essay grading based on text categorization techniques, text complexity features and linear regression methods was first explored by Larkey (1998).

The underlying idea of this approach relies on training of binary classifiers to distinguish “good” from “bad” essays and on using the scores produced by the classifiers to rank essays and assign grades to them. Several standard text categorization techniques are used to fulfill this goal: first, independent Bayesian classifiers allow assigning probabilities to documents estimating the likelihood that they belong to specific classes; then, an analysis of the occurrence of certain words in the documents is carried out and a k-nearest neighbor technique is used to find those essays closest to a sample of human graded essays; finally, eleven text complexity features are used to assess the style of the essays. Larkey conducted a number of regression trials, using different combinations of

components. She also used a number of essay sets, including essays on social studies, where content was the primary interest and essay on general opinion where style was the main criteria for assessment.