

STUDENT EVALUATION TOOL THROUGH NATURAL LANGUAGE PROCESSING

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Abstract— *Evaluating a student is not an easy task, it is a major problem in the current education system. The same is true for manually assessing a student in developing countries, especially in developing countries like India. Here is a solution to save resources and time in the education system. This paper provides an idea to assess the student at any time. Machine learning technology through the use of natural language processing. This technology that automates evaluation takes less time compared to human resources and has more accurate results.*

I. INTRODUCTION

Artificial intelligence is a trending technology, not a 21st century technology. The origins of AI date back to the 1960s. Technology was helpless in those days due to data and computational speed. Our technology on a daily basis has made tremendous change in the speed of data collection and computation. Most games are designed using AI. Deep Blue is a computer game that defeated world chess champion Garikasperov on May 11, 1997.

Today 80% of the world has structured data. It is generated by humans, machines, cameras and calls, which is huge to process and in other words it is called big data.

Natural language processing is a component of Artificial Intelligence that can understand human language. There are various open source libraries, such as the Natural Language Toolkit (NLTK), Stanford NLP. NLP is a way to understand human-related information related to

technology and computers. There are many examples of NLP, conversion of speech into text, correction of grammar in English sentence and natural language processing can also help to capture data on social media for sentiment analysis.

Excluding the applications mentioned above they are other applications which are widely used and also play a major role like 1) Question Answering. 2) Speech Recognition. 3) Text Classification.

1) Question Answering: This Question Answering Applications are like Machine Answering the questions about specific topic. For an example if we ask and question about the a topic machine will replay answer about that specific topic. like Google assistant.

2) Speech Recognition is the most famous application from NLP. It Converts human understandable language into machine understandable language. There are lot many real time applications are designed from this technology. Apple Sire, Google assistant are based on this.

3) Text Classification is the most useful application in the present industry. it is used to summarize the meanings and to classify them. Example for installation of any software we need to go throw a huge document which has information about software in it. It takes much time to

understand that particular document. If a machine make work easier for us by classifying the text and summering that content in it. That is where NLP comes in the picture. There are many examples as mentioned above.

As we all know human language is more complex to identify than any other patterns. There are lot many different types of variation in the pronouncing the words. And also different types of languages for communication. It makes machine bit complex to understand patterns regrading natural languages.

NLP is technology which gives the massive information from unstructured data. It contains data like medical records, accounts, Notes etc. which will take for a human to analyses the difference NLP makes such work more east to analgise.

The future of AI is endless. The people always debit on the topic of whether AI is going to end the human intervention in making things. Well, it is not the case. Rather it will create lot many opportunities for humans to explore the creative side of life.

"AI will be efficient at removing boring jobs and freeing people to do more creative work," says JordiTorras, founder and CEO of Inbenta, an NLP technology company.

Advantages in AI:

Artificial intelligence is complex in nature. It uses very complicated mixture of computer science, mathematics and other complex sciences. Complex programming helps these machines replicate the cognitive abilities of human beings.

1. Error Reduction:

Artificial intelligence helps us in reducing the error and the chance of reaching accuracy with a greater degree of precision is a possibility. It is applied in various studies such as exploration of space.

Intelligent robots are fed with information and are sent to explore space. Since they are machines with metal bodies, they are more resistant and have greater ability to endure the space and hostile atmosphere.

They are created and acclimatized in such a way that they cannot be modified or get disfigured or breakdown in the hostile environment.

2. Difficult Exploration:

Artificial intelligence and the science of robotics can be put to use in mining and other fuel exploration processes. Not only that, these complex machines can be used for exploring the ocean floor and hence overcoming the human limitations.

Due to the programming of the robots, they can perform more laborious and hard work with greater responsibility. Moreover, they do not wear out easily.

3. Daily Application:

Computed methods for automated reasoning, learning and perception have become a common phenomenon in our everyday lives. We have our lady Siri or Cortana to help us out.

We are also hitting the road for long drives and trips with the help of GPS. Smartphone in an apt and every day is an example of the how we use artificial intelligence. In utilities, we find that they can predict what we are going to type and correct the human errors in spelling. That is machine intelligence at work.

When we take a picture, the artificial intelligence algorithm identifies and detects the person's face and tags the individuals when we are posting our photographs on the social media sites.

Artificial Intelligence is widely employed by financial institutions and banking institutions to organize and manage data. Detection of fraud uses artificial intelligence in a smart card based system.

4. Digital Assistants:

Highly advanced organizations use 'avatars' which are replicas or digital assistants who can actually interact with the users, thus saving the need of human resources.

For artificial thinkers, emotions come in the way of rational thinking and are not a distraction at all. The complete absence of the emotional side, makes the robots think logically and take the right program decisions.

Emotions are associated with moods that can cloud judgment and affect human efficiency. This is completely ruled out for machine intelligence.

5. Repetitive Jobs:

Repetitive jobs which are monotonous in nature can be carried out with the help of machine intelligence. Machines think faster than humans and can be put to multi-tasking. Machine intelligence can be employed to carry out dangerous tasks. Their parameters, unlike humans, can be adjusted. Their speed and time are calculation based parameters only.

When humans play a computer game or run a computer-controlled robot, we are actually interacting with artificial intelligence. In the game we are playing, the computer is our opponent. The machine intelligence plans the game movement in response to our movements. We can consider gaming to be the most common use of the benefits of artificial intelligence.

6. Medical Applications:

In the medical field also, we will find the wide application of AI. Doctors assess the

patients and their health risks with the help of artificial machine intelligence. It educates them about the side effects of various medicines.

Medical professionals are often trained with the artificial surgery simulators. It finds a huge application in detecting and monitoring neurological disorders as it can simulate the brain functions.

Robotics is used often in helping mental health patients to come out of depression and remain active. A popular application of artificial intelligence is radiosurgery. Radiosurgery is used in operating tumors and this can actually help in the operation without damaging the surrounding tissues.

7. No Breaks:

Machines, unlike humans, do not require frequent breaks and refreshments. They are programmed for long hours and can continuously perform without getting bored or distracted or even tired.

Disadvantages in AI:

1. High Cost:

Creation of artificial intelligence requires huge costs as they are very complex machines. Their repair and maintenance require huge costs.

They have software programs which need frequent up gradation to cater to the needs of the changing environment and the need for the machines to be smarter by the day.

In the case of severe breakdowns, the procedure to recover lost codes and re-instating the system might require huge time and cost.

2. No Replicating Humans:

Intelligence is believed to be a gift of nature. An ethical argument continues, whether human intelligence is to be replicated or not.

Machines do not have any emotions and moral values. They perform what is programmed and cannot make the judgment of right or wrong. Even cannot take decisions if they encounter a situation unfamiliar to them. They either perform incorrectly or breakdown in such situations.

3. No Improvement with Experience:

Unlike humans, artificial intelligence cannot be improved with experience. With time, it can lead to wear and tear. It stores a lot of data but the way it can be accessed and used is very different from human intelligence.

Machines are unable to alter their responses to changing environments. We are constantly bombarded by the question whether it is really exciting to replace humans with machines.

In the world of artificial intelligence, there is nothing like working with a whole heart or passionately. Care or concerns are not present in the machine intelligence dictionary. There is no sense of belonging or togetherness or a human touch. They fail to distinguish between a hardworking individual and an inefficient individual.

4. No Original Creativity:

These are not the forte of artificial intelligence. While they can help you design and create, they are no match for the power of thinking that the human brain has or even the originality of a creative mind.

Human beings are highly sensitive and emotional intellectuals. They see, hear, think and feel. Their thoughts are guided by the feelings which completely lacks in machines. The inherent intuitive abilities of the human brain cannot be replicated.

5. Unemployment:

Replacement of humans with machines can lead to large scale unemployment.

Unemployment is a socially undesirable phenomenon. People with nothing to do can lead to the destructive use of their creative minds.

Humans can unnecessarily be highly dependent on the machines if the use of artificial intelligence becomes rampant. They will lose their creative power and will become lazy. Also, if humans start thinking in a destructive way, they can create havoc with these machines.

Artificial intelligence in wrong hands is a serious threat to mankind in general. It may lead to mass destruction. Also, there is a constant fear of machines taking over or superseding the humans.

Based on the above discussion, the Association for the advancement of artificial intelligence has two objectives – to develop and advance the science of artificial intelligence and to promote and educate about the responsible usage of artificial intelligence.

Identifying and studying the risk of artificial intelligence is a very important task at hand. This can help in resolving the issues at hand. Programming errors or cyber attacks need more dedicated and careful research. Technology companies and technology industry as a whole needs to pay more attention to the quality of the software. Everything that has been created in this world and in our individual societies is the continuous result of intelligence.

II. SYSTEM MODEL

System Model clearly state the Automation of Correction process which takes lot of resources. The process of correcting a student or evaluating a student is total a manual work. This system model will take us to evaluate the student in a easy way and saves us resources and time.

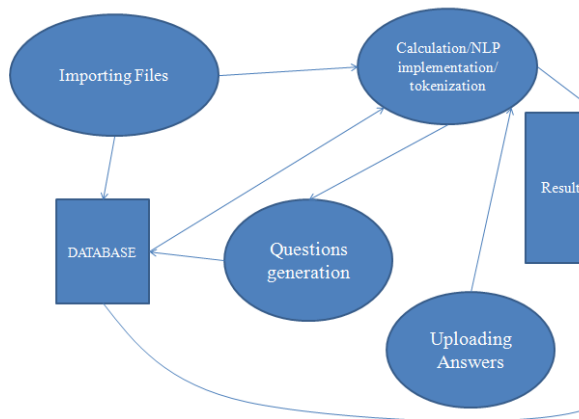


Figure.3 Architecture of Student Evaluation system

There will be two users and there is common module between to users login page. Admin is master user who can create the another users. 1) Admin - usually refers to the teacher or a lecturer who can upload the content and conducts the test. 2) student - usually refers to the student who takes test.

The Admin have privileges like: 1) Creating users 2) Uploading Content 3) creating questions 4) Creating Test for users 5) Making correction.

1) Creating Users: Creating users is task of admin to allow users to take test.

2) Uploading Content: Uploading Content refers to providing Information to the system to gain knowledge from and to correct the papers. The all data will stored in the text area. And the path in database. Context is refers to the original blue print of the

3) Creating Questions: Creating Question is a task of Admin to set the level of

examination. This Questions are generated for the topics uploaded.

4) Conducting test: Admin after completion of all the process. He have alights to conduct test on particular dates scheduled. There are different parameters can be mentioned by the admin like time of test, Marks allocated to particular question.

5) Making Correction: Correction is the automation process in which it involves the NLP to correct student paper by comparing semantics of two text files. It will display the result as output. And also admin can view how many student attended the test what is the total pass percentage, fail percentage. And total work progress of a student.

Student have privileges like: 1) Taking test 2) View Results

1) Taking test : After all the process like creating test completed by admin. On the day of examination a student can take the test with respect to the particular subject and allocated questions.

2) View Results: Student at time of result he can view the results on his person window. And also the mistakes made by student in his exam.

III. RELATED WORK

There are lot many constraints related to student evaluations. The system should be intelligent enough to identify which subject the student is writing exam about. Here is to make sure all the constraints are satisfied. Here we are using NLP to evaluate student answers. There are lot many tools which

provide us sentence parsing lexical analyse and tokenization.

Here in this Application we are using visual studio C# for user Interface, database: SQL Server 2017 for DB operations. For NLP we are using NLTKa open source python extension which provide us with 50 corpora and lexical resources like WorldNet and also text processing libraries for tokenization, tagging, parsing, semantic reasoning etc.

Evaluation Algorithm:

Here in the first version of project we are going to implement Algorithm to identify keywords in the original text (original file which is uploaded by admin). These keywords are extracted throw NLTK by predicting the parts of speech in every sentence.

for Example:

"Agra is near Delhi. Delhi is the capital of India."

If the above sentence is from original text. The extraction of keywords depend on the POS like nouns, verbs are gathered by using NLTK in python script.

By taking student file as input in Algorithm will tokenize the sentence. We check the probability of the correct sentence by passing each sentence through algorithm. And the algorithm contains list of probable part of speech.

Algorithm make sure that keywords are not repeated in the list. This list of keywords are used in major part of algorithm to allocate marks to student. The list of Keywords as probably nous. We collect all the nouns in the Original text and store it for the evaluation. This list of nous are searched in the student file for

verification. This process will give us the probability to how much extends the answer may be correct. Each sentence will be checked whether the key works exist are not validate the keyword scenario.

We define a logic for spell check using the spell check function in NLTK we can check the Spelling mistakes in the student data. By calculating the whole average words in the system we can get the probability of spelling mistakes. By comparing the average percentage we can give the total percentage of student.

By passing the large corpus in to this system and evaluating the sentence. The sentence refers to the exact sentence which is grammatically correct. If the sentence is exactly satisfying the condition it returns true then probability of correct sentences.

IV TESTING

Software Testing is processes use to help to identify correctness, security; completeness and qualities of develop computer software. The testing is processed of technical investigations, which performs on the behalf of a stakeholder, which can intend to reveal a quality-related information's about product with the respect to context, which it's intend to operates.

TYPES OF TESTS

1 Unit testing :Unit tests involve the designs of tests cases that can validate that internal programmed logic functioning properly and that the program input produces a valid output. At all decisions branches and the internal code flows can be validates. Its testing of individual software's unit of an application .it's done after completion of individual units before

integrations. This is structure tests that will relies on the knowledge of it construction and invasive. Unit tests will perform the basic test at component levels and testes were a specified business processes, applications, and/or systems configuration. The Unit testing ensure that an each unique paths of business and process performs with an accurately to documented by specifications and that contains clearly too define an inputs and the expect result.

2. Integration Testing :Integration tests were design to test and integrate the software component to be determined that actually runs on one program. Then testing is an event that driven and more were concern with a basic outcomes of screens or the fields. Integration testing demonstrates that even the component was an individual satisfaction, as shows by a successfully unit tests, such combinations of a components are correctness and consistent. The integration testing was specifically to be aimed for exposing problem that can arises from the combinations of components.

3 .Functional testing:

A functional test provides a systematic demonstration that functions that tested were available as a specified by business and a technical requirement, system documentations, and the user manual.

Functional testing is centre on a following item:

Valid Inputs: identifies the classes of a valid inputs can be accepted.

Invalid Inputs : identifies the classes of an invalid inputs can be rejected.

Functions: identifies the functions that must exercise.

Output : identifies the classes of applications and outputs must exercise.

Systems/Procedure: which interfaces a system or procedures that must be invoked?

Organizations and preparation of a functional testing is to be focused on key functions, requirements or a special test case. In an addition the systematic coverage of pertaining to be identifies a Business process that flow a data field, predefined process, and a successive process that must considered for a testing. Before the functional testing is to complete, an additional tests can identified and effective values of a current test is to be determined.

4. System Testing:-System testing ensured that an entire the integrated software systems that meet a requirement. Its tests the configuration for ensures known and a predictable of result. As example of systems testing is configuration oriented systems integration tests. System testing can be based on processes of description and flows such emphasize the pre-driven process of links and an integration point.

5. Black Box Testing :Black Box Tests is testing software without the knowledge of any inner working, structure or a language of modules being tests. Black box testing, as the most other kind of testing, that must be there written in from of definitive source documents, such a requirement or the requirement documents, such as the specifications or requirement documents. It's a testing which software under tested is treated, as a black box .you cannot "see" into it. The test provides inputs and responds to outputs without considering how the software works.

6 White Box Testing :White Box Test is the testing in which software tester has the knowledge of inner workings, structures and language of software or at least it purpose. It's used to tests the area that can't be reach from black box level.

7. Acceptance Testing :Users Acceptance tests is a critically phases for any project and that requires a significant and participation by end users. It can be ensure that system meets a functional requirement.

V Conclusion:

Semantic comparison of text in the student evaluation tool using Artificial Intelligence refers to the automation of the student evaluation process. This is a basic project that suggests a low grade of classes to evaluate. We need high implementation for high standards. Many problems in this particular implementation evaluation system need to be overcome. And also reduced the time to evaluate the student in high end implementation. And it handles the submission of one-to-one marks in the system. It will be the most promising product for all organizations to assess the student and the student to improve them in a good way.

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