Automatic Answer Script Evaluator

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Abstract: The way of correcting or evaluating a answer script in the present days is becoming so adverse nowadays and also a heavy burden for the faculty to correct the papers this is the major problem found nowadays in the educational institutions and also by the human evaluator there might be some mistakes over taken or even some overridden the problem arises if the hand writing might not be understood by the evaluator or even the mood of the person hence we came up with the idea of machine correcting the papers in this project we are having two parts converting the hand written letters to a text document and then evaluating it . In evaluating we use the techniques of computer vision and artificial intelligence methods for converting into text from hand written and for the later we use a algorithm called as natural language processing which understands the natural language of the human and tokenizes the words required and then checks the words with the key already uploaded by the lecturers hence the evaluation is perfectly done and the burden also decreases. The evaluation processes mostly depends on the key words used in the answer script and the matching in the key paper given by the faculty

Keyword: Artificial Intelligence, Machine learning, Natural language Processing

1. INTRODUCTION
The era of technological development today, without realizing the technology has become a need that is often used for the life of today's society. [1]IoT is a structure in which objects, people are provided with an exclusive identity and the ability to move data through a network without requiring two-way inter-human to human source either destination or human interaction to the computer. IoT is a very promising development to optimize life based on intelligent sensors and smart appliances that work together over the internet.

The basic way of assessing the students capability is evaluating the answers in the exam written by them this way we can assess the students learning ability. [2] The automated system if it does the evaluating there might be a accurate measurement of the capability of the students instead of the human correcting the paper which takes a lot of effort and cost and it might not be totally accurate. Here unlike other answer script evaluators we evaluate from the hand written answer script which is more comfortable and easily accessible for the students and also easy instead of the text document. Here the faculty or the institution just need to upload the key for the answers. [5] And just uploading the answer scripts directly to the system it generates the marks for each student separately.

Here there are two parts in it

1) Hand written character recognition
2) Evaluating the answer scripts

Hand written recognition:
In hand written recognition we have a tendency to ar victimization optical character recognition. The handwritten detection algorithm takes input images containing a line of text and words and returns a matrix with the chance of every character showing in the matrix. Specially, the matrix which is of the size (sequence_wordlength × vocabulary. of type characters).

Our pipeline to mechanically acknowledge written text includes: page segmentation and line segmentation

Evaluating the solution scripts:
Tokenization may be a technique employed in tongue outfit (NLT) to divide the sentences into words. the explanation behind the tokenization is to perform some things to be enforced on the tokenized words. [4] The component of Speech tagging in NLT is employed to assign the tag for the tokenized words. Then between these important keys are to be taken down and to are checked with the tokens within the key words

2 METHODOLOGY:
Handwritten Recognition:
Briefly, utilizing a CNN for image classification and feature extraction and fed the options into a bitface LongShortTermMemory and trained the network to optimize the Connectionist Temporal Classification (CTC) loss

Intuitively, the CNN generates image options that square measure spatially aligned to the input image. The image options square measure then sliced on the direction of the text AND consecutive fed into an LSTM. This network is denoted as CNN-biLSTM. the most reason that the CNN-biLSTM was elect is as a result of flat LSTMs well a lot of computationally dearly-won compared to the CNN-biLSTM.
Multiple down samples were provided to help in recognizing pictures of written text that adjust in size (e.g., lines that contain only one word vs lines that contain seven words). Note that a pre-trained res-net was used as a image feature extractor.

Language models
We explored 3 ways to extract a string of words given a matrix of chances square measure explored: 1) greedy search, 2) lexicon looking, and 3) beam looking + lexicon looking with an language mode.

2.1 Greedy search: The ravenous inquiry technique just repeats over whenever step and gets the preeminent plausible character at each time step: This approach doesn't utilize any outer language models or vocabulary to change the outcomes.

2.2 Lexicon searching: The dictionary search model utilize the yield of the covetous technique what's more, makes an endeavor to coordinate each word with a lexicon. The techniques are the ensuing techniques were taken: 1) Decreasing the size of the string, 2) Giving tokens to the string based on the words 3) for each word: 3.1) check if the word given is a English word or identify the language of the word if not, suggested words similar to that 3.2) Replace the word with any other word similar to that with the shortest weighted distance 4) Contract texts back to the its original kind. Every string is checked and delineated to the string and therefore the string is decontracted Here the contractions of the string means the similar version the word but at a smaller and shorter word. For example, have not → haven’t, I have → I’ve (For more words look here ). In the Way of removing the contractions the contractions were used. The below library shows the contractions and decontractions whether necessary or not For deconstructing ambiguous cases (e.g., ain’t → am not/are not), the library utilizes a language model (google news) to assess the correct case.

2.3 Tokenization of the string in the sentence:
Tokenization is a process of separating a string containing a sentence into distinct words. The tokenize package from the natural language toolkit was used to execute this. This process is continued till every word is tokenized and done by iterations.

2.4 Suggest words if it's not a word
For all the words that are Tokenized, the pyechent module is used to check the word if it is a English word or not if it is a English word no changes are made if it is not an English word then norvig spellchecker checks the word and suggests the nearest word possible for the word.

2.5 Select the suggested word with the shortest weighted edit distance
Given a list of words to be changed, the weighted edited distance between the suggested words and the given word were calculated. Specifically, the edit distance was weighted on the differences between the handwritten characters. The Character similarity was modeled using the CNN-bitLSTM performance, given the training examples. The number of variations between actual words and the expected words (insertions, deletions, and replacements) was counted. The greater the frequencies of a mistake, the more characters are visually similar. Therefore, the weight should be smaller. The main problem is the weighted distance is limited to one character being replaced by another. It is common for compounds to look alike (e.g., “rn” and “rn”) in handwriting recognition.

3. Contract texts back to its original form
This step merely detokenizes and contracts the words (if it absolutely was initially decontracted). All in all, the vocabulary spell checker works best for anticipated strings that a awfully preparing to the specific worth. In any case, if the yield of the covetous algorithmic program doesn't give shut enough string proposition, the vocabulary spell checker will truly downsized correct nesses as opposed to up it. A last check to ensure that the information and yield sentences ar comparative was performed. Shaft watching out + vocabulary search + language model In request to ease the issues of acquiring poor proposition from the avaricious algorithmic program, one will rehash through the probability framework to get different proposition. Nonetheless, positioning every single achievable proposition is computationally expensive. Graves et al. [5] arranged that the pillar search algorithmic program will be acclimated create K recommendations of strings given the likelihood matrix. In our execution, the K sentences are at that point sustained into the vocabulary spell checker to guarantee that words will be found in a very vocabulary ( else it'll appear as ). Every K proposition is then tokenized and continuous nourished into a language model to gauge the psychological disarray of each sentence proposition. The sentence proposition with the base mental perplexity was picked. The voracious, dictionary search, and shaft search yields blessing comparable and reasonable expectations for the picked models. In Figure about six, eye catching models are given. the essential line of Figure about six show cases any place the vocabulary search algorithmic program given fixes that adjusted the words. The prime model inside it, “catching” (as it was written entirely then it can be written) was “catching” corrected and “woving” was “waving” corrected. Moreover, the beam search output corrected “a” to “all,” but an area between “lovely” and “things” is incomprehensible. In the second example, the lexicon search output “self” was born-again to “salt.” “Selt” was wrongAll the same, though. Born-again to “self” in the search results of the beam. Therefore, be am search performed worse in this example. In the third example, none of the three ways offered significantly accessible res ults. Finally, the lexicon search algorithm in the fourth example program incorrectly born-again “for him” into “forum”, but the beam search algorithmic program properly known “for him”. Quantitatively, the greedy algorithmic program had a mean character error rate (CER) = eighteen.936 whereas the lexicon search had CER = eighteen.987. While not the weighted edit distance, the lexicon search had CER = nineteen.204, well.
reducing the performance of algorithmic program. As given in Figure half dozen, the CER improvement between exploitation the greedy algorithmic program and therefore the lexicon search was token is. Needless to say, the beam search algorithmic program out performed the greedy and therefore the lexicon search results with CER = 18.840.

Figure 2: evaluation of paper by using key sheet

Tokenization The solution sheet tokenization can contain multiple paragraphs and each paragraph contains multiple sentences in succession. Sentences should be divided from paragraphs and words from sentences for analysis. Such a cacophonous mechanism between sentences or paragraphs is referred to as a token of separation Speech Tagging elements The NLTK module includes a powerful side called Speech tagging elements dealing with the segmentation of a label such as Noun, Adjective, etc. For each of the words tokenized. Avoid Words Removal Stop System words. That doesn't have vital importance to be used in Search Queries. These words space unit sometimes filtered out of search queries as a result of Brodningnag Ian quantity of surplus information. Stemming words Stemming is the method used to reduce inflected (or generally derived) words to their stem, base, or root type in linguistic morphology and data retrieval. Computing the similarity of the similarity of the sentence linguistics can be a measure illustrated over a number of records or words. The hole between the arrangement of archives or terms is based on their similarity that implies content or etymology rather than representation of the sentence structure (such as their string group).

Report Generation This Module is utilized to send the report back to the researchers concerning their presentation in each question. The arrangement sheet should be assessed for each understudy and furthermore the outcome's sent to all or any the researchers through mail. The report concerning the general execution of the researchers, singular execution of the researchers, subjects (in that during which within which) the researchers region unit powerless and which must be focused on extra zone unit sent to the school individuals for extra activities. Tokenization of the main sentences for the comparative problem zone system to be incorporated into the knowledge by the school towards the beginning. The researchers' arrangement sheet is to be moved within the record location, and each corresponding answer within the information archive area unit tokenizes what's more, divided into words. At that point the key sentences zone unit recovered from the data and zone unit tokenized and split into the words. The token partition clarification is to isolate the sentence into word by word all together that it is clear to coordinate with the arrangement the phonetics which methods for the key sentences. By exploiting the nltk (Natural Language Tool Kit) in-manufactured work known as "nltk.word tokenize(sentence)" the token division is upheld by any place sentence that is the parameter that will be tokenized. Information: "It might be a fake language. It's a system acclimated language." Yield: ['It', 'is', 'a', 'programming', 'language', 'arranged', 'system']

Parts of Speech tagging remarkably English language comprises of eight segments of discourse. The POS tag is designated upheld the utilization of words inside the sentences. Similarly to see the use of words inside the content archive, everything about words inside the tokenized sentences is distributed with the worthy segments of discourse tag. The key sentences for the relating answer region unit to be recovered from the data and assigned with the satisfactory segments of discourse tag. The parts of discourse labeling is authorized by exploitation the nltk (Natural Language Tool Kit) in-assembled work known as "nltk.pos_tag(words)" any place words is that the parameter that zone unit tokenized by the penetrable operate. Input: ['It', 'is', 'a', 'programming', 'language', 'arranged', 'system'] Output: ['It', 'is', 'a', 'programming', 'language', 'arranged', 'system']

Step 1: start.
Step 2: Type and store the correct answer in the table.
Step 3: Using POS tagger, set up watchwords, label catchphrases, and assigned loads endless proximity in sentence.
Step 4: Store equivalent words and antonyms into another table.
Step 5: Set understudy score to zero. Info understudy reaction and store it in another table i.e. SR table.
Step 6: Presently check whether catchphrase blessing in SR table if blessing apportioned score=score + effectively distributed weight.
Step 7: If watchword not discovered sign in equivalent words table and on finding allocate score=score + effectively distributed weight.
Step 8: Check on the off chance that antonyms blessing in SR table in the event that blessing, at that point score=score*(-1).
Step 9: Check the position vector of noun and verb combination in input answer and compare it thereto of correct answer to verify dependencies of noun and verb in answer.
Step 10: If grammatical mistakes area unit gift deduce a pair of marks from internet score.
Step 11: Currently build summation of allotted several Student responses.
Step 12: If scores calculated area unit negative then answer entered by student is inaccurate, else if scores area unit in same vary with already allotted scores then student response is marked to be CORRECT.

4 Results:
Answer sheet:

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security challenges existing in IOT
• Physical theft and tampering
• DoS / DDoS
• Physical theft and tampering
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Figure3: answer script

Marks:
9/10
Key:
1) Identifying the security challenges existing in IOT system?

As more enterprises embrace the Internet of Things, a host of new security vulnerabilities will emerge. The increased risk can be attributed to device limitations, and because of missed opportunities to enhance security. Here are 12 leading IoT security challenges that enterprises must address.

- Secure constrained devices
- Authorize and authenticate devices
- Manage device updates
- Secure communication
- Ensure data privacy and integrity
- Secure web, mobile, and cloud applications
- Ensure high availability
- Detect vulnerabilities and incidents
- Manage vulnerabilities
- Prioritize and pre-empt security issue Attacking IoT
- Default, weak, and hardcoded credentials
- Difficult to update firmware and OS
- Lack of vendor support for repairing vulnerabilities
- Vulnerable web interfaces (SQL injection, XSS)
- Coding errors (buffer overflow)
- Clear text protocols and unnecessary open ports
- DoS / DDoS
- Physical theft and tampering

5 CONCLUSION:
Here by we conclude that, through this automatic answer script evaluator which decreases the correction stress for the faculty and also if there might be any miscorrections also there so to reduce those we can use this automatic answer script evaluator. This answer script evaluator is a better performer when compared to other because of using CNN this can also be implemented very easily.

6 REFERENCES:


Venkata Srinu, M, Venkateswara Rao Morla, Kali Vara Prasad


