RESEARCH ARTICLE OPEN ACCESS

Computer Aided Environment for Drawing (To Set) True or False Objective Questions From Given Paragraph.

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ABSTRACT
In this paper, we developed true or false objective questions from the given paragraph. The system creates true or false statement from the sentence selected from the given paragraph. And NLP parser is used for parsing and POS tagger functionality used to encode the sentence. We present our work in design and implementing system which generate true or false. System is developed in java using JDBC and mysql for storing in database, both are open source.
Generating Automatic True or False Statements, Objective test generation task become faster and expedient manner, and system saves time.
We have evaluated our system with different 200 sentences and present the result. And kept true and false statement approximate equal in length. Avoided Double Negative Sentences i.e. If sentence is already negative then not is not added in the sentence.
***Keywords*:** POS Tagger, Sentence Selection, NLP System

I. INTRODUCTION

True or false exercise widely used for examining the student knowledge. In this true or false statements student will present the sentence from given paragraph, whether that statement is true or false that need to answer. Preparing this question manually will take lots of time and efforts. In this automatic true or false sentences will be generated from given paragraph.

PHP is not Server side scripting language.
a). True
b). False

In True or False Statement such as above, Sentence from the paragraph is selected and Student's need to answer whether this statement is true or false. So Sentence Selection (SS) need to select from the given paragraph. The aim is to go through the paragraph and extract the informative sentence from the given paragraph and generate true or false statements. Our System takes paragraph as input and produce list of true or false questions as output. Various works has been done for generating MCQ questions from the text, Sentences or Paragraph or Chapter. Not able to find any models which generate true or false statements from the given text. So researcher has decided, to generate automatic true or false question from the given paragraph.

II. PARAGRAPH TO TRUE OR FALSE STATEMENT GENERATION

Given paragraph, the true or false questions are generated from following steps:

1. Data Processing,
2. Sentence Selection,
3. Make it negative for false statement,
4. Store in Database and
5. Display the result.

Data Processing will process on the sentences with the use of NLP Parser. Sentence selection identifying informative sentence from the paragraph, One by one every sentence is read and informative sentence is selected from the paragraph. Make it negative for the false statement. Store true or false statement in the database with its answer and Display the result on the screen.

The overall architecture of the system is displayed in Figure 1.

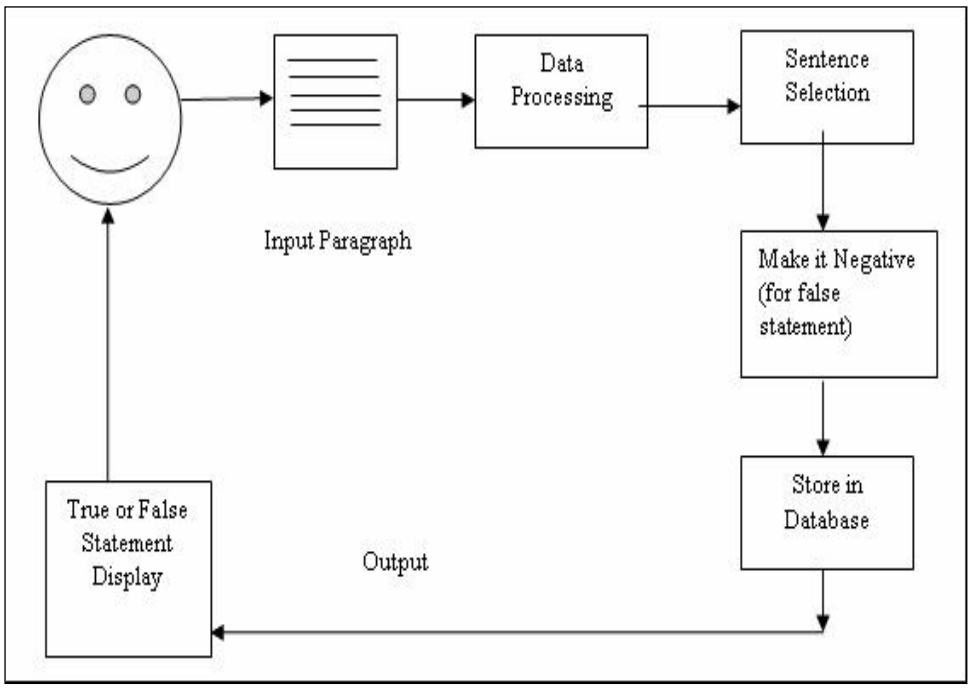

Figure 1: Architecture of system

Data Processing

In Data Processing module goes through all sentences from given paragraph and used NLP Stanford parser which parser the sentences and divided into small fragments called *token*. And from that token POS tagger is used, which provides a representation of grammatical relations between words in a sentence [1].

Sentence Selection

In Sentence Selection module extract a set of features like [2],

Count number of Sentences.

Paragraph entered count number of sentences from that paragraph. On basis of full stop.

Count number of words.

Count number of words in the sentence. Short sentence generate unanswerable question because short content and very long content might have enough content to make the question generated.

Count number of nouns

Noun and gives an idea about the sentences, if maximum number of noun in sentence means not can be added before that sentence and that sentence having good content which can generate the true or false sentences.

On the basis of these features important sentence will be extracted from the given paragraph.

Make it negative for false statement

Once sentence is selected we need to generate the true or false statements. If want true statement then will not make any changes in this sentence, but if false statement need to generate, sentence we need to make it negative by adding "not", "no" and "never: in the sentence.

Store in Database

Once sentence is selected from paragraph that statement will be true statement or false statement has been generated and that will be stored in database i.e. mysql (which is open source database) with the answer of the statement created. It will first check whether question is already available in database, then it will not store again otherwise will store that question in database.

Display the result

As an output Generated true or false questions will be displayed on the screen with its answer. If user want to generate fixed number of question from particular paragraph that functionality is also available. If number of question is more than the sentences in the paragraph then automatic it will generate the question as many sentences are available in the paragraph.

III. Implementation of the system

Implementation of the system which automatic generates true or false question from the given paragraph and stored in database i.e. mysql is used for storing data. User need to enter the paragraph, and

total number of question need to generate from the paragraph. If number is larger than the total number of sentences in the paragraph than in that case it automatic generate question equals to number of sentences in paragraph.

Once users click on Generate true or false statements, question will store in database, as well as display on screen. If question is already available in database will not store again.

System is developed in Java using JDBC which is an open source and for storing data in database mysql is used which is also an open source. And NLP parse is used for parsing the sentence one by one from the paragraph.

If any of the sentences is already negative, than that sentence will not add not in the sentence i.e. Avoided Double Negative Sentences.

Algorithm for generating true or false statements

1. Enter the paragraph P
2. Enter Number of questions CtQ generated form P.
3. Read the statements from the paragraph S.
4. Calculate number of sentences CtS.
5. Calculate number of words from each sentence CtW
6. For each CtQ from P do
   For each CtNoun from S do
   Select the sentence which contains maximum number of nouns and should not have a negative sentence.
   IF Max(CtNoun) from S then
   IF NOT CtNo, CtNot, and CtNever from S then
   SetenceSelected SS
   Endif
   If there is no negative sentence and sentence which having maximum number of noun
   Else
   Make that sentence as true statement
   EndIF

   EndFor
   EndFor
7. If same number of noun found in different sentence than. First sentence will be selected from paragraph.

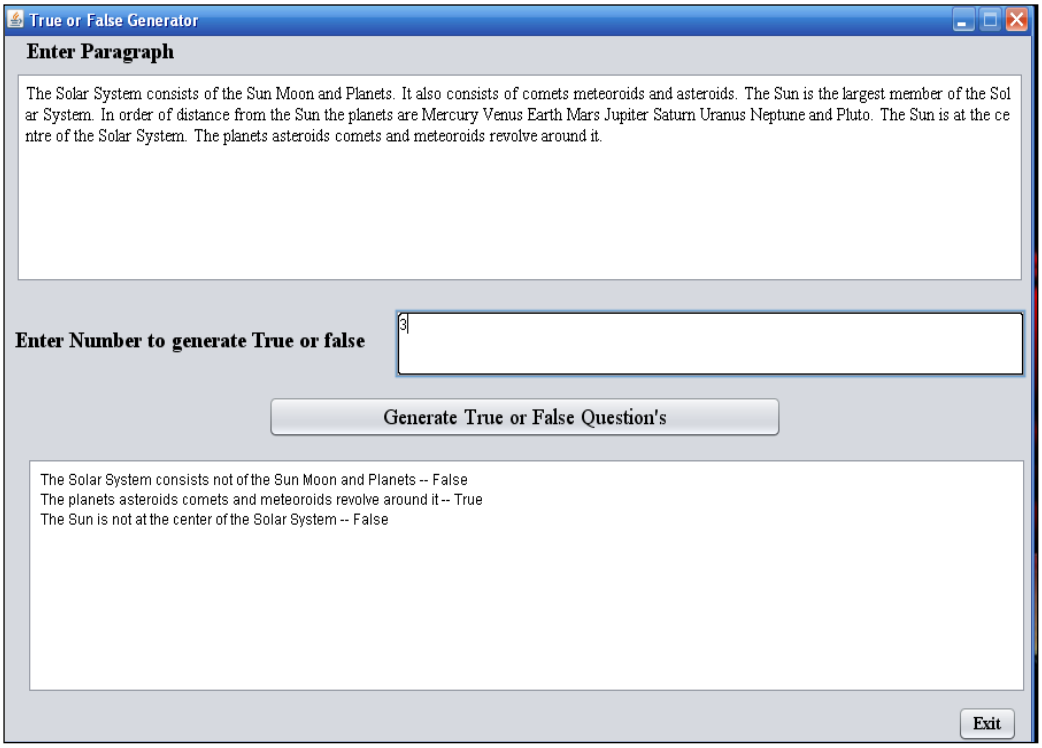

Figure 2: Sample screen shot of the system

IV. Evaluation Result

Approximate 200 sentences which has been downloaded from the internet and tested, for false statement 80% of sentences adding **not, never** at appropriate position and false i.e. negative sentence is generated, where 20 % of sentences not able to add **not, never** at appropriate position.

Table 1: List of Inputted Sentence which Converted into false Sentences using not

Input Sentence	Negative Sentence
I am a teacher.	I am **not** a teacher.
Tom is as old as you	Tom is **not** as old as you
She advised him to go.	She advised him **not** to go.
That's my favorite topic.	That's **not** my favorite topic.
Plastic does break easily	Plastic does **not** break easily
I am hungry because I did eat lunch.	I am hungry because I did **not** eat lunch.
You are supposed to smoke at school.	You are **not** supposed to smoke at school.
I make it a rule to watch television after nine o'clock.	I make it a rule **not** to watch television after nine o'clock.

Table 2: List of Inputted Sentence which Converted into false Sentences using never

Input Sentence	Negative Sentence
Mary decided to see him any more.	Mary decided **never** to see him any more.
She did her best to think of him.	She did her best **never** to think of him.
I've heard him speak ill of others.	I've **never** heard him speak ill of others.
My father has been sick in his life.	My father has **never** been sick in his life.
I for a moment imagined that I would win.	I **never** for a moment imagined that I would win.
Tom fails to send a birthday present to his father.	Tom **never** fails to send a birthday present to his father.

Table 3: List of Inputted Sentence which not able converted into correct false Sentences.

Input Sentence	Negative Sentence by system	Negative Sentence should be
I am disappointed that my friend is here.	I am **not** disappointed that my friend is here.	I am disappointed that my friend is **not** here.
I think I 'm really any good at German	I think I 'm **not** really any good at German	I think I 'm really **not** any good at German

V. Conclusion and Future work

Our System will select the informative sentence from the paragraph and generate true or false question from the paragraph. Syntactic features from NLP parser helps to create the true or false questions from paragraph. We look forward to experiment large number of data i.e. from chapter and through this system for making false statement, word will not change suppose sentence is PHP is server side scripting language. Our System will make PHP is not server side scripting language. It will not make changes in the sentence like PHP is client side scripting language, Evaluation of these feature will be part of our future work.

Reference

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