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DESIGN APPROCH OF IMAGE RETRIEVAL MECHANISM BASED ON REGIONAL NLP

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ABSTRACT: Rapid development in the field of ML, AI or NLP is taking the system at next level in the terms of intelligence and the decision making. On other hand education sector are growing by making different experiments in teaching methodologies but still systems are lacking with teaching to naïve users or teenagers. Searching the image on the basis of its name is easier task rather searching it on the basis of the content was always big challenge. We have different dictionaries where individual words are represented using the statements and not the graphical presentation. Displaying the words through graphics has its own limitation it requires a natural language processing technique to understanding the user input which may be at different aspects and it becomes more difficult if it's in regional languages. This papers mainly focused on application and implementation methodologies of NLP.

Keywords, NLP, segmentation, token, parsing

INTRODUCTION

Natural language processing (NLP) is a field of computer science, artificial intelligence, and computational linguistics concerned with the interactions between computers and human (natural) languages and, in particular, concerned with programming computers to fruitfully process large natural language corpora. Challenges in natural language processing frequently involve natural language understanding, natural language generation (frequently from formal, machine-readable logical forms), connecting language and machine perception, managing human-computer dialog systems, or some combination thereof.

Statistical Natural Language Processing

Since the so-called "statistical revolution" in the late 1980s and mid-1990s, much Natural Language Processing research has relied heavily on machine learning. Formerly, many language-

processing tasks typically involved the direct hand coding of rules, which is not in general robust to natural language variation. The machine-learning paradigm calls instead for using statistical inference to automatically learn such rules through the analysis of large *corpora* of typical real-world examples (a *corpus* (plural, "corpora") is a set of documents, possibly with human or computer annotations).

Many different classes of machine learning algorithms have been applied to NLP tasks. These algorithms take as input a large set of "features" that are generated from the input data. Some of the earliest-used algorithms, such as decision trees, produced systems of hard if-then rules similar to the systems of hand-written rules that were then common. Increasingly, however, research has focused on statistical models, which make soft, probabilistic decisions based on attaching real-valued weights to each input feature. Such models have the advantage that they can express the relative certainty of many different possible answers rather than only one, producing more reliable results when such a model is included as a component of a larger system. Systems based on machine-learning and NLP algorithms have many advantages over hand-produced rules:

- The learning procedures used during machine learning automatically focus on the most common cases, whereas when writing rules by hand it is

often not at all obvious where the effort should be directed.

- Automatic learning procedures can make use of statistical inference algorithms to produce models that are robust to unfamiliar input (e.g. containing words or structures that have not been seen before) and to erroneous input (e.g. with misspelled words or words accidentally omitted). Generally, handling such input gracefully with hand-written rules—or more generally, creating systems of hand-written rules that make soft decisions—is extremely difficult, error-prone and time-consuming.
- Systems based on automatically learning the rules can be made more accurate simply by supplying more input data. However, systems based on hand-written rules can only be made more accurate by increasing the complexity of the rules, which is a much more difficult task. In particular, there is a limit to the complexity of systems based on hand-crafted rules, beyond which the systems become more and more unmanageable. However, creating more data to input to machine-learning systems simply requires a corresponding increase in the number of man-hours worked, generally without significant increases in the complexity of the annotation process.

PROPOSED SYSTEM

Consider a situation a child playing or heard about any word defining object or a action and he is curious about that word, Here system could find the graphical representation of word or statement using graphics dataset and NLP.

Searching the image on the basis of its name is easier task rather searching it on the basis of the content was always big challenge. We have different dictionaries where individual words are represented using the statements and not the graphical presentation. Displaying the words through graphics has its own limitation it requires a natural language processing technique to understanding the user input which may be at different aspects and it becomes more difficult if it's in regional languages.

The proposed system will be designed and develop to get the user input in regional language and process it what user is actually demanding and presenting that requirements in the form of graphical images. User need to ask for his query in natural language and system will find out the objects, activities and properties of object from language and try to find the best match for the same.

EXPECTED RESULT

Aim and the Objective of the proposed system can be better explained with the help of figure 1.0. As the image describe the example user is giving query in natural language and system after processing showing right image as an output. As we can see user has given in input for desired requirements and finally get the right result on successful execution of the query.

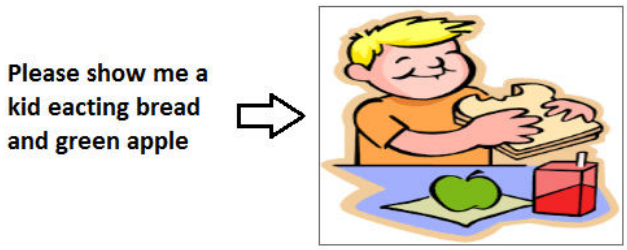

Figure 1.0 Example execution of the system

On successful execution of the proposed system it should provide near to accurate and possible result of the system this will help beginners to learn from example. System will generate the result not on the basis of input query directly rather it will try to find out the objects, activities or the object properties requested by the user and then processing the query by NLP get the result from knowledge dataset.

METHODOLOGY

In order to have brief idea about NLP and its application we have taken a visualizer application as a example where the system will be trained and programmed to show images on the basis of given textual information. work is mainly divided in to multiple sections or the module which can be described through figure 1.0 which shows the system process flow.

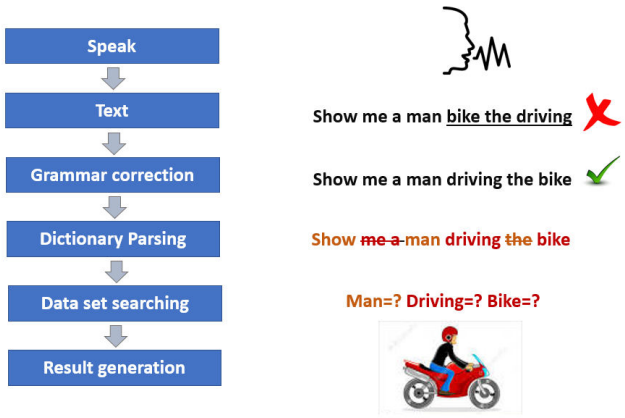

Figure 1.0 System process flow

Main proposed work of the system is,

- Preparing the knowledge dataset and training the system where before system reach at its goal system need to prepare with it's knowledge database. In this step system will be having option to add new images and defined it's descriptions like header data, searching tags, object available in image, colour shade of the image, etc. this way system will having the information to search.

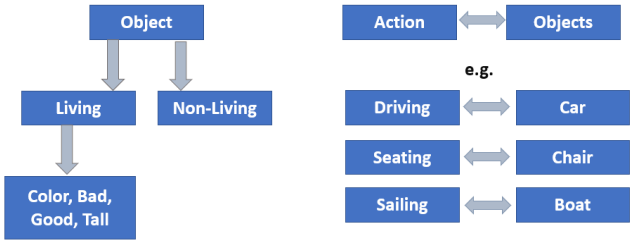

Figure 2.0 Knowledge base methodology

- Get the user input in the form of speech and convert it in to text possibly in regional language. As the main user base of the system is planned to be a kids or teenagers we are trying the give system speech recognition capability where system will convert speech to text with the help of available speech API or SDK. If available we may use regional language for input.

- Try to find out the grammatical and syntactical errors in the user input and resolve it with the user intervention. It may possible that user input having some syntactical or grammatical mistakes in the statements so first system needs to pre-process the data and make it correct before passing to next step.

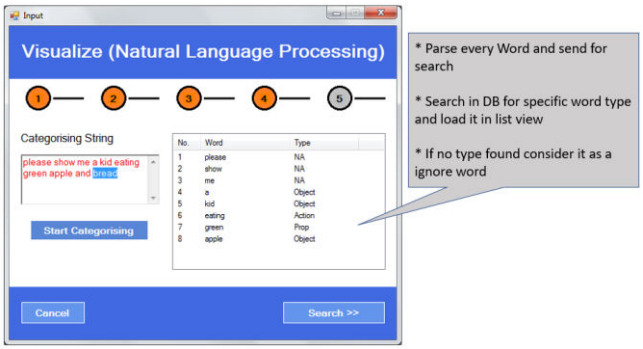

Figure 3.0 Categorization of words

- Parsing of the query in order to get the co-related words and removal of unwanted words. Every word in statement having some level of importance so with the help of parsing of input string system will first tokenize the whole input in to multiple tokens and then finds out the most feasible and required words.

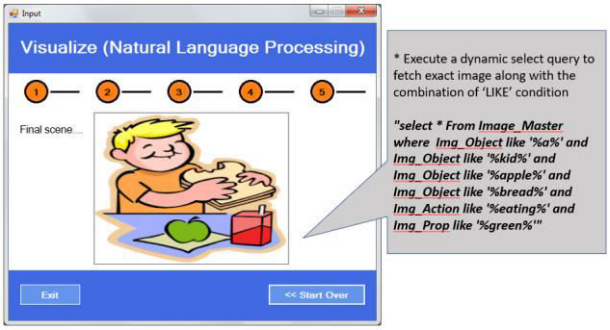

Figure 3.0 SQL query based search

- Executing the search query after identifying the activities, object and its properties from user input and final generate the result

CONCLUSION

Modern NLP algorithms are based on machine learning, especially statistical machine learning. Prior implementations of language-processing tasks typically involved the direct hand coding of large sets of rules. With the help of better use of NLP, it has been seen that variety of applications can be implemented with right approach and the techniques. By implementing the proposed system, we can take the further steps to make the machine learning and the knowledge set generation graphical at next level. One promising outcome we observed is that the semantic parsing model gives negative weights to the word skipping features (with the exception of and punctuation) and the grammar rule application features with counts of zero.

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