International Journal of Current Trends in Engineering & Research (IJCTER)
e-ISSN 2455–1392 Volume 2 Issue 2, February 2016 pp. 136 - 139
Scientific Journal Impact Factor : 3.468
http://www.ijcter.com

Instructional Learning Artificial Intelligence

(Artificial Intelligence Enhancement)

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Abstract—This paper will introduce the reader to the algorithm which replaces the training algorithm with natural instruction that can make the core of AI in the future. This paper is based on the algorithm that was implemented as a final year project. This algorithm can be implemented in any programming language. It is platform independent and can be extended as to use specially in AI robots.

I. INTRODUCTION

There are lots of data that has to be processed in various situations. Some data are personal information some are academic etc. we need computers to understand the data and do with them a particular task. Training algorithm requires massive samples and labour work therefore we need an instructional way to teach the software about the various data types. This paper will help you develop such an AI which can understand human language and categorize the data accordingly to perform the task.

This paper is helpful to you if you are making an AI that can learn and understand human language and act accordingly. This algorithm is tested in English Language only but can be used in various other language which has similar grammatical structure. This paper assumes that you have a good knowledge of regular expressions and object oriented programming flow. You should also know artificial intelligence theory. You can use this algorithm to improve the software intelligence of any type of computing devices.

There are many algorithms including text classifier but this one uses AI with regular expression making it easier for normal people to make the computing device understand when a particular text falls into a particular category.

II. RESEARCH

All AI require training data something which makes it inconvenient for normal user to make the software understand the available data and actually call a programmer to add it to his software. The training though is supervised requires frequent sample insertion and waiting for the training algorithm, on the contrary this instruction based software can actually understand a particular type in one go when it was explained or defined by the user.

There are many text classifiers like Bayesian Classifier which actually classify text according to frequent occurrence but are really irrelevant when it comes to general public.

Already AI similar to the described are as follows

- Cortana analyses various sentence from predefined phrases by developers it uses an xml coding something which normal people can’t do neither the background coding.
- Siri is a cloud based AI that can answer to already programmed instructions

- Google Now just reads out the search results.

Though they are good at their own respect this AI can be the key to their future extension. This AI can actually be extended with Cortana as it has the capabilities.

III. ALGORITHM

The algorithm include two parts instructional and implementation part. The instruction part algorithm still can be divided into two parts

- Regex Generator
- Answer Analyzer

Regex Generator generates regular expression from natural user language which the user specifies in the form of definition. This algorithm is itself created using regular expression making it flexible. The compound sentence if first split into simple sentence. This simple sentence is analyzed for various words along with its flow. And then it is passed to the basic unit which actually produces the regular expression.

Answer Analyzer compares the text that the user wants as answers with the text that has been identified and marks the group of regex as answer in database. This helps the user to actually get what the user means because there are certain text that are near the required group with the text.

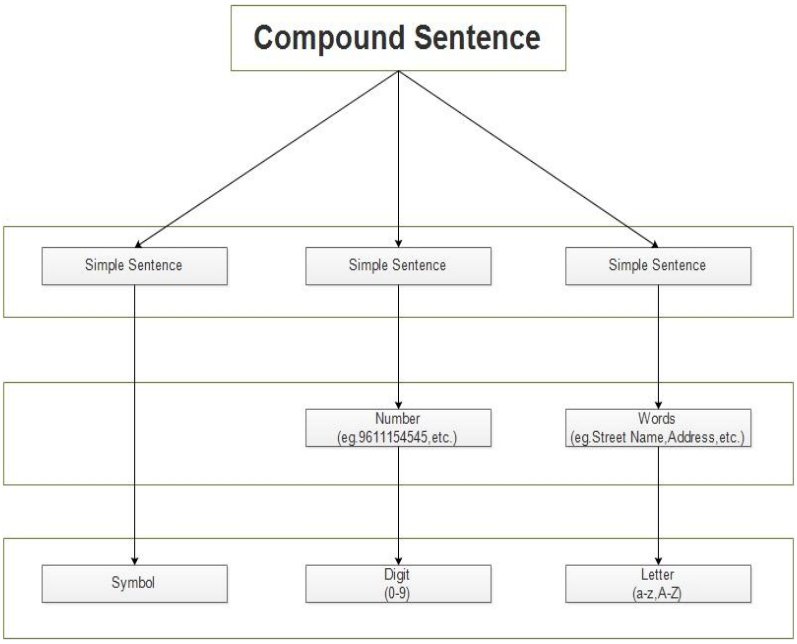

Figure 1: Data Flow Diagram

The algorithm for instruction goes as follows:

```
1. For each instruction
2. Break the sentence at conjunction and form simple sentences
3. For each simple sentence
        i. Analyze the simple sentence for the type of instruction whether it is for
           variable entity or static entity or an advanced one.
       ii. Determine the properties the user has specified
      iii. Generate the regular expression
       iv. Append the regular expressions
        v. Ask the user to enter a sample text and select the answer which is to be output
4. For each group of regex that contains answer
    a. Save the group as answer.
```

The answer at the time of determination uses analysis algorithm. This algorithm is typically very easy to implement compared to the instructional algorithm.

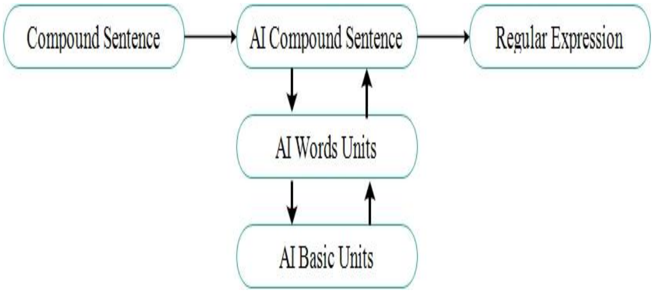

Figure 2: Class Flow Diagram

The algorithm for analysis goes as follows

```
1. For each instruction set in database
    a. Check whether the regex matches the text
    b. If the text is matched
        i. Check the groups which are the answer as determined by the user
        ii. Output the answer.
```

Preparation for the algorithm:
You will require a relational table which contains regex along with its group answers and language specific SDKs.

Prepare three classes for regular expression generation section. One which manages the basic units i.e. letters, digits and symbols then

IV. TESTING

To test the algorithm you need to test all the instructions which are made possible by your grammar and test it on a specific application or test document.

The testing first should be done for basically three units the symbol regular expression the letter regular expression and the digit regular expression as they form the basis of the regular expression generator. Then carry out the unit test for properties of the basic regular expressions.

After testing for basic units is completed start testing for word testing unit which understands various combination words

If that unit is running successfully you can go with compound sentence unit and check if it works well for all types of conjunction.

V. APPLICATIONS

- Portilligence: This algorithm was used in portilligence application which is a mobile application that was developed to demonstrate the power of this AI. This application used the AI API's to understand the various aspect of the data and identifies the various categories. It let users take a click of image document it needed to performed optical character recognition on the image. The text obtained was passed through the AI which reported all the various categories such as name, mobile number, address, etc. and save to contacts. It also understood the scheduling and was able to schedule the event on the phone with the title of the document. It is able to save document in the specified folder.

- Robotic AI: This type of learning can help develop a more intelligent robot that can understand the user better.
- Content Searching: This algorithm can search for various content based on the users demand and will.
- Automatic content rating: This can be used in automatic rating of the content according to the level of adult words in the document or movie or application or message.

VI. DISADVANTAGES

- This algorithm is really hard to implement as it requires not only careful flow of control but also serious knowledge of the human language.
- Sometimes the algorithm may show unexpected results if the regular expression is not perfect for a particular word.
- If every possible detail is not given by the user the identification might fail. The user should also mention a blank space.
- It is difficult to implement for complex sentences though it is possible.

VII. CONCLUSION

Algorithm for Instructional Learning Artificial Intelligence is constructed which can be implemented on various platforms by using their required SDK's ,thus achieving the flexibility in developing instructional learning applications and enhancing the idea of artificial intelligence.

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