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Conversion and Execution of SQL Queries from Natural Language Processing

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Abstract *:* This paper describes an automatic conversion of query in natural languages to SQL successfully. SQL is a strong tool used to control the data in DBMS environment. For fetching the data, users must enter proper SQL query. But the people who do not have knowledge about the SQL and SQL commands, are unable to fetch data. To avoid this problem we used a system called as NLQP for converting the NLQ to SQL query. It helps the user to retrieve data by using natural language.

IndexTerms - Natural language, Query processing, Syntactic, Semantic, Data Dictionary.

1. INTRODUCTION

NLP is an area of software industry and machine intelligence bothering about the interaction between computers through human languages. A language can be defined as a set of rules and set of symbols. Symbols can be combined with the Structured Query Language (SQL). The main purpose of NLP is a form of AI that analyzes the human languages. Automatic Speech Recognition is one of the software becoming more famous and used in many Applications. For normal users; it is very difficult to understand the database Query language like SQL. The main aim of the system is to convert user entered query in common speaking language into SQL. Finally, it generates a result by using NLQP. Few softwares do not have capacity to scan the composite queries. Thus, NLQP uses a semantic grammar to represent the lexical parse. Later it transforms the natural language sentence into the SQL commands . By using converted commands, users can retrieve the data from the Database. The users can directly interact with Database. Especially for the normal peoples who do not know the Query Languages. NLQP is used for Semantic Grammar is used to Design and Developing a system which understands the Natural language and converts the English language to the SQL Queries. It reduce complexity of the database.

2. RELATED WORK DONE

Many Researchers are works on the NLP. The users can ask the questions to the database in a natural language. It is easy to access the data from the DB. Especially for normal peoples who do not realize the SQL queries. The success of this NLP is partly because real world benefits come from the NLP systems. Natural Language Processing works on database system.

Support the Dynamic Database(A.R.FALLE et.al 2017): Its supports the all changes in database of the end user. This system was designed to get complete, formal, symbolic and meaningful, representation of NLP and it generates not only query but also provides the user expected results. [1]

The Spelling Correction (ziqi.w .et.al 2014): In this system they are concentrating about spelling correction .It uses two techniques: In first case, it uses dictionary and second case without using dictionary but the size of the dictionary is large. So it uses word pair mining technique for spelling correction in the query. [3]

A natural language to understanding in a Computer program(Terry W, 1968): The users can directly interact with the Computers, Moving objects, naming collections and querying the state of "blocks world". The blocks of words are written in a Micro planner, Lisp programming language and DEC graphics terminal. [4]

Question Solving System (Nguyen Tuan Dang, 2009) Question Answering framework is a strategy to construct a scan framework for the books in a library. The clients can type a basic English language for Searching in a library which the client required a data about the books, similar to a title, writer, distributer, and so on. In this system, it is mainly focusing on the problems of a Natural Language Query Processing (NLQP). It includes the semantic representation, transformation rules, and syntax representation. [2].

3. PROBLEM DESCRIPTION

Many people are required to access some particular data in entire database. NLP is a processing in which users enters in a natural language that will be converted into query language. The normal users do not understand the SQL queries. Hence this system is help to them.

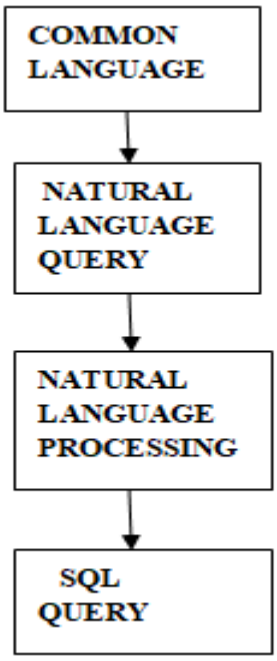

Figure 3.1: Problem Description

The above figure3.1 shows the conversation of users and computers in a Natural Language Processing. The user enters a simple natural language. The objective of NLP is to parse the query and search in Dictionary or Database. The Natural Language processing uses some different phase's i.e. Morphological analyzer, lexical analyzer etc. It finally generates the SQL query.

4. SYSTEM DESIGN

We explained how the Natural Language Processing works on inside the system, it means there are several phases used in NLP i.e. Morphological analysis, Lexical analyzer etc. In first phase the vocalization is converted into simple English language or natural language. In second phase the text is analyzed to check whether the text is syntactically correct or not using syntactic rules. In third phase the text is mapped into the syntax translation. In fourth phase we extract the intermediate query. In fifth phase we find the required tables. In sixth phase, it translates the natural language to query language and later obtaining the results.

4.1 Morphological Analyzer

In this stage, sentence is divided into tokens i.e. the smallest meaning of words. Each word is stored on list. Individual words are analyzed in their components. Non-word tokens are separated to the words. Ex. if we give input as a "find the USN of Pallavi", in this phase this sentence is split into the words i.e. find, USN, of, Pallavi.

4.2 Lexical Analyzer

It is a process of converting the sequence of words and each word of sentence is mapped with the same word in dictionary. It is used to the WordNet. WordNet is an online lexical reference system. It is used to identify the parts of speech.

4.3 Syntactic Analyzer

In syntactic analyzer sequence of words are transformed into the structures. In the first stage, it finds the attribute which are present in the input query from words generated by the lexical analysis. Each word is analyzed with the attributes which are in dictionary and that contains all tables. And then it will find the tables which attributes is given by SQL query.

4.4 Semantic Analysis

It is focused on the meaning of each words present in a NLQP. In this level it deals some different condition operators i.e. relational operators, join clause and SQL query. After checking all conditions SQL query will be executed and then final it gives the correct answer.

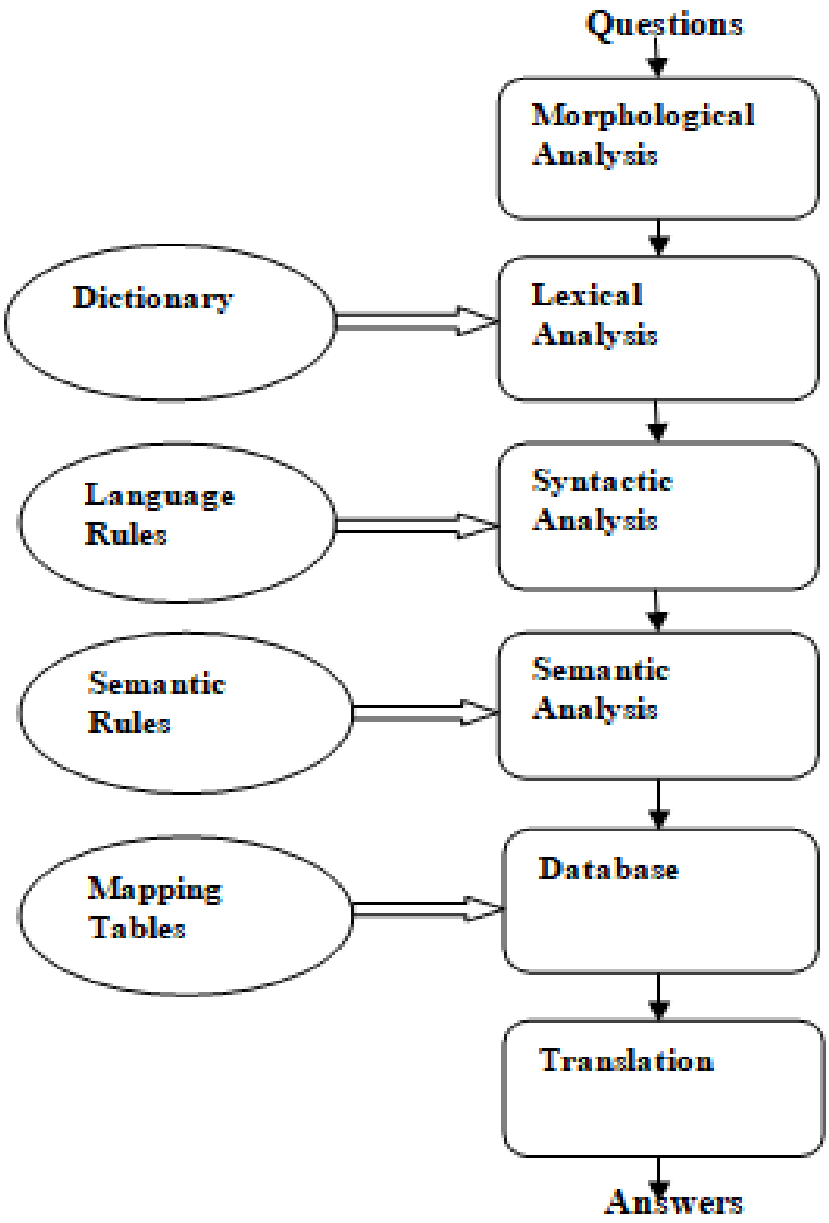

Figure 4.1: System Design

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