Nature Communication System based on Wechat public account

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Abstract. Users can add a Wechat public account by scanning QR code, then input text and voice information on chatting interface, searching for pertinent sentences in Database table through connecting with the MySQL database and return pertinent text answer to user's chatting interface.

Introduction

At present, on one hand, voice input get stable development because of convenient and fast. On the other hand, people become more and more lonely in the urbanization process and they hope that someone can chat with them to kill time. In order to solve this problem, we finished a nature voice communication system based on the Wechat public account. Users input a voice or text massage, then this public account can return a text massage which can answer users' question in order to communicate with users, which provides a way to kill time for users when they feel bored. By using some methods(for example: expanding the lexicon), we can promote the accuracy of this nature voice communication system and give users a better feeling.

The theory of natural language communication system based on WeChat public System

An introduction of WeChat public account. We Chat public account is an account that applied by the developers or businesses on WeChat public System, and interconnects with QQ account(QQ is the most popular social software). The businesses can comprehensively communicate and interact with specific communities through letter, picture, voice, and video on WeChat System, forming a mainstream online and offline WeChat interactive marketing mode. Registering on WeChat public System can gain the users appID and appsecret, which can be used to invoke API of WeChat public System in order to realizing basic functions of natural language communication system.

About voice recognition. It is well known that voice recognition is a complexity problem for IT industry. The CEO of Apple company's Jobs have contemplated using voice input to replace keyboard input. But the speech recognition rate of Siri is only about 80%. Testing Wechat speech recognition function, we found that the Wechat recognition rate is about 70% when the users speak standard mandarin, which means we can using the result of Wechat recognition to finish this system.

Chinese sentence division. As Chinese natural languages communicate system, the key is to devise a Chinese sentence to several key words, which makes system whether smart and accurate.

We use DEDE words division algorithm and words bank to divide one sentence into several keywords successfully. We proved that this method could take responsibility to analyze sentence.

Classify database table. We established five database tables in MySQL database. Key value in table 1 is five words. If we input a sentence of five words, DEDE will analyze this sentence into five words respectively. If these five words are found in table 1, the system will return the corresponded question to user. Key value in table 2 is four words, as long as four words are found, the system will return the corresponded question to user. Key value in table 3 is three words, as long as three words are found, the system the system will return the corresponded question to user. Key value in table 2 is two words, as long as two words are found, the system will return the corresponded question to user. Key value in table 5 is one word: If one word is found, we will tell user that we can't found answer because including one key word answer lacks accuracy.

How to improve accuracy of natural language communication system. We provide a function of adding vocabulary entries for users. We require the users to provide questions and answers, dividing the questions by DEDE, then setting the divided keywords as primary key of table 1, writing the answer into the corresponding property. So we can expand the words bank. When the words bank become extremely big, we manually sort and arrange them to improve the answer accuracy of natural language conversational system.

The flow chart of systematic design
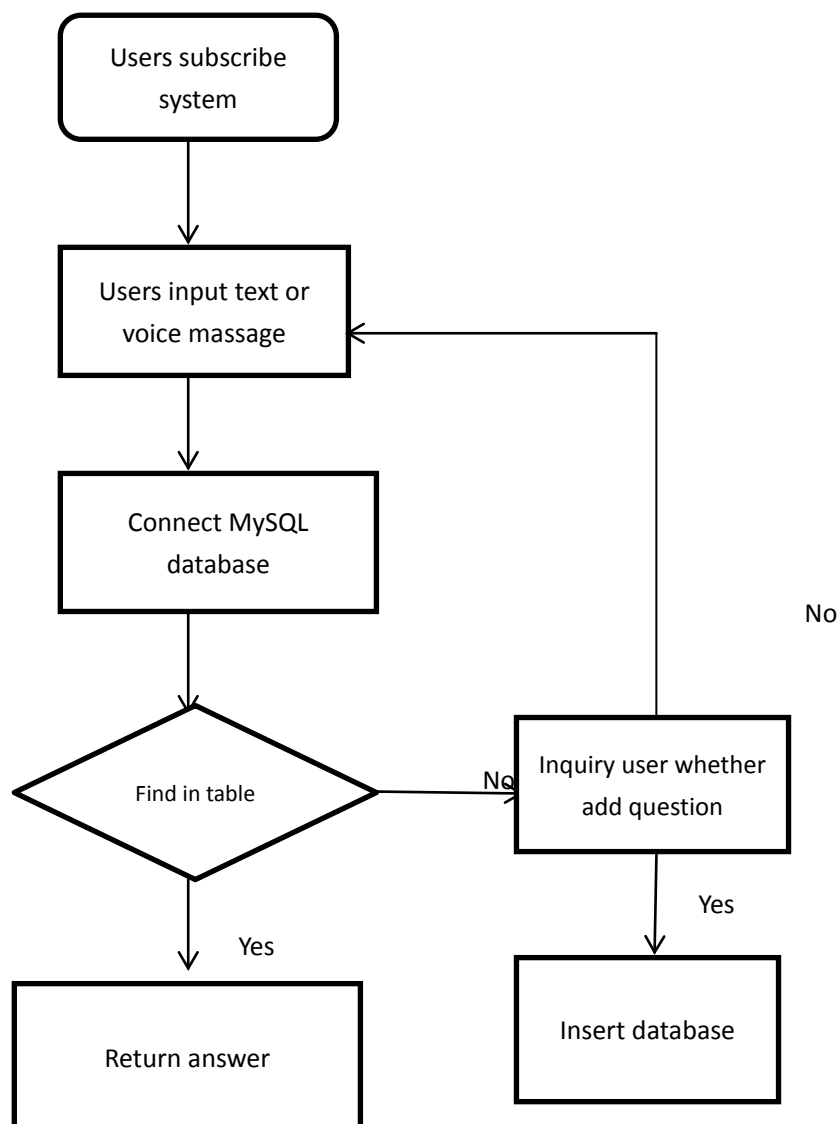
The introduce of nature Communication System based on Wechat in program aspect

Analyze String. First, we need to seed massage to DEDE word bank ：require("lib_splitword_full.php"). Then

Use explode(" ",$sp->SplitRMM($str)); to analyze String.

Match keyword.

We compare the record which stored in database to keyword:

if($bb==0)//   situate which table

```
$result = mysql_query("SELECT * FROM wu");
          while($row = mysql_fetch_array($result))
                        {
                   $dada=$row['da'];
                        $i=$i+1;
                   $hao[$i]=$row['ID'];
                        }
                   $d=mt_rand(1,$i);
                   $ff=$hao[(int)$d];
$result = mysql_query("SELECT * FROM wu    WHERE ID=$ff");
```

2.1.3   Add record:

If user input question that can't find in whole MySQL database, we insert this into database. We insert question into table 1 for a instance:

```
if(strstr($a, '&'))
                        {
                   $var=explode('&',$a);
                      $wen=$var[0];
                       $da=$var[1];
$con = mysql_connect("103.229.125.127","skliucong","123456");
                        if (!$con)
                           {
                   die('Could not connect: ' . mysql_error());
                           }
                   mysql_select_db("sqlskliucong", $con);

                   mysql_query("INSERT INTO biao (da, c1)
                        VALUES ('$da', '$wen')");
                        $dada="ok";
                           }
```

Using wechat speech recognition interface:

```
private function transmitText($object, $content, $funcFlag = 0)
                              {
                        $textTpl = "<xml>
             <ToUserName><![CDATA[%s]]></ToUserName>
          <FromUserName><![CDATA[%s]]></FromUserName>
                   <CreateTime>%s</CreateTime>
             <MsgType><![CDATA[text]]></MsgType>
```

```php
                    <Content><![CDATA[%s]]></Content>
                        <FuncFlag>%d</FuncFlag>
                            </xml>";
$resultStr = sprintf($textTpl, $object->FromUserName, $object->ToUserName, time(), $content,
                            $funcFlag);
                        return $resultStr;
                            }
            private function transmitNews($object, $arr_item, $funcFlag = 0)
                            {
                        if(!is_array($arr_item))
                            return;
                    $itemTpl = "        <item>
                    <Title><![CDATA[%s]]></Title>
                <Description><![CDATA[%s]]></Description>
                    <PicUrl><![CDATA[%s]]></PicUrl>
                        <Url><![CDATA[%s]]></Url>
                            </item>
                            ";
                        $item_str = "";
                    foreach ($arr_item as $item)
$item_str .= sprintf($itemTpl, $item['Title'], $item['Description'], $item['PicUrl'],
                        $item['Url']);

                        $newsTpl = "<xml>
            <ToUserName><![CDATA[%s]]></ToUserName>
        <FromUserName><![CDATA[%s]]></FromUserName>
                <CreateTime>%s</CreateTime>
            <MsgType><![CDATA[news]]></MsgType>
                <Content><![CDATA[]]></Content>
                <ArticleCount>%s</ArticleCount>
                        <Articles>
                    $item_str</Articles>
                <FuncFlag>%s</FuncFlag>
                        </xml>";

    $resultStr = sprintf($newsTpl, $object->FromUserName, $object->ToUserName,
                    time(), count($arr_item), $funcFlag);
                        return $resultStr;
```

Building database and inquiry:

Using "mysql> create database database1" to build a new database. Using "create table <table table > (<question> <answer> [,..<question> <answer>])" to build five tables,   primary keys is question key word. Use "select   from tablename where ="to get answer

Advantages

1. Using the most popular Wechat System, we deal with problems of cross-platform.

2. The accuracy of voice recognition will be enhanced, going with the optimizing of Wechat recognition interface.

3. Users can scan QR code to use Nature Communication System instead of download a new APP

4. Users don't need to update APP in order to use new functions.

5. The System has the high accuracy.

3.2 Shortcomings and improvement suggestions

The system uses DEDE to divide words, while means division accuracy influenced by the tool DEDE at first. Secondly, this system can't reply voice massages due to lacking enough storage, which can solve by expanding MySQL database rooming. Last but not least, we can't expand words bank extremely big; In the meanwhile, we are considering using a more comprehensive and big words bank.

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