Design and Implementation of Intelligent Response Robot Based on Python

Lan Ye

Nanchang Institute of Science and Technology, Nanchang 330108, P. R. China

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Abstract: This paper studies the design and implementation of specific intelligent response robots, and expounds the functional design, system architecture design, database design, etc. The correctness of the intelligent response robot designed in this paper is verified.

Introduction

With the continuous progress of China's science and technology, China will always talk about artificial intelligence when talking about the word technology. There is no doubt that China has begun to move towards an intelligent society and has intelligence in life. A series of intelligent products such as mobile phones, intelligent sweeping robots, and intelligent dishwashers are born. In terms of production, there are AGV intelligent vehicles, unmanned vehicles, and drones. Products are born, even in the fields of medicine, military industry, aerospace and other fields are all penetrated by intelligent products.

1. Feature design

The design and implementation group of the intelligent response robot is important to have those functions, which functions can be realized, and which aspects can be intelligent, and for the design and implementation of the specific intelligent response robot in this article, there are two-dimensional code simple login, intelligent dialogue, hotel Several functional designs of query, weather query, translation (English to Chinese translation), course query (course of this semester), and score query (all grades over the years), the specific design is as follows:

(a). Two-dimensional code simple login: when you click to run the file, a two-dimensional code will appear, users only need to scan the two-dimensional code, you can log in to the web page to carry out the corresponding intelligent answering robot and user dialogue.

(b). Smart Dialogue: After logging in to the webpage, the user only needs to enter a string! wx plus what you want to say, you can achieve a dialogue between the intelligent answering robot and the user.

(c). Hotel Inquiry: After logging in to the webpage, the user only needs to enter the string! Hotel to realize the corresponding hotel inquiries using an intelligent answering robot.

(d). Weather query: After logging in to the webpage, the user only needs to enter a string! Wx Shanghai weather today, you can use the intelligent answering robot to perform the corresponding weather query.

(e). Translation (English to Chinese): After logging in to the webpage, the user only needs to enter the string! Trans to perform the corresponding translation using an intelligent response robot (English to Chinese).

(f). Course Inquiry (Course of this semester): After logging in to the webpage, the user only needs to enter the string! Class to implement the corresponding course inquiry using the intelligent response robot (course of this semester).

(g). Score query (all scores in the past years): After logging in to the webpage, the user only needs to enter the string! Score, and can use the intelligent answering robot to perform the corresponding score query (all scores in the past years).

2. System architecture design

The design and implementation of the specific intelligent response robot use web pages as the carrier, so this article is based on the J2EE platform. The MVC framework adopted by the back-end Web is Spring MVC, and the ORM (Object Relational Mapping) framework uses iBatis There are also IOC (Control Inversion) and AOP (Aspect-Oriented Programming) frameworks using Spring, the algorithm server Web framework uses the Django framework, and uses the B / S browser structure.

3. Database Design

The MySQL database is essentially a kind of database. The specific source code is open to the public. The MySQL database is issued by a Swedish company. The specific MySQL database uses a structured language to operate and query for management. And because the complexity of the source code used by the MySQL database is low, the code runs very fast, and because of its open source, the development cost of the MySQL database is also very low. It can be said that the MySQL database, whether it is an enterprise or various This is a software system that national institutions like very much. Therefore, this article selects the MySQL database for data storage.

4. Specific steps

The actual operation steps of the system for the design and implementation of specific intelligent response robots can be divided into the following six steps:

(a). Download and install MySQL, create a database named mate, and import mate-server / mate.sql.

(b). Download and install Tomcat server.

(c). Using the mainstream Python IDE, you can run after configuring the Tomcat server after importing the project.

(d). The account name of the common user is root and the password is root; the account name of the administrator user is admin and the password is root.

(e). Map the server to the public network and modify the global variable url to the public network address.

(f). Run background application management.

5. Feasibility analysis of the construction of intelligent response robot system

(a). Technology: Since the other aspects of the design and implementation of the intelligent response robot are already mature, and the MySQL released by the Swedish company is open source, the existing technology fully meets the requirements.

(b). Data support: The data uses publicly published website links and is completely open source, so the data fully meets the requirements.

(c). Legal support: Because the data uses publicly published website links, there is no violation of the law, so it fully meets the requirements.

For the different functions involved in the previous article, and to verify the correctness of the design and implementation of the intelligent response robot designed in this article, we must design related verification test cases. Taking the test project design of the user management functional test group as an example, the case design process is described in detail. In general, writing test cases has the following requirements:

(a). Functional coverage: The test case must cover all test requirements.

(b). Input coverage: During the test, for each test content, when there are different conditions for the input conditions, each case must be tested separately.

(c). Output coverage: During the test, for each test case with different input conditions, the corresponding correct output should be generated, and these outputs should cover various different results that may occur. Only when the above conditions are met, can the designed test case meet the requirements and be able to guide the actual test.

6. Test case writing

First follow the writing principle of the test case explained above, according to the method of dividing the equivalence class, the user management function can be divided into two parts: reading user deletion and user data modification. Then, increase user data management based on boundary value analysis. Then the following test items can be established.

Test-related functions include: simple login of QR code, smart dialogue, hotel query, weather query, translation (English to Chinese translation), course query (course of this semester), score query (all scores over the years).

Test the above functions. If the final test result passes, the test result in the last column is expressed as P (pass). Specific test cases are shown in Table 1 below:

Table 1. Test cases for the design and implementation of intelligent response robots

Test group	Classify	Test items	Test Results
User management function test group	User Management	Add a user	P
User management function test group	User Management	Delete a user	P
User management function test group	User Management	User modification information	P
User management function test group	function test	QR code generation	P
User management function test group	function test	Smart conversation	P
User management function test group	function test	Hotel Inquiry	P
User management function test group	function test	Weather query	P
User management function test group	function test	Translation (English to Chinese)	P
User management function test group	function test	Course Inquiry (Course of this semester)	p
User management function test group	function test	Results query (all results over the years)	p

It can be seen from the test case table in Table 1 that we are not only for simple login of QR code, smart dialogue, hotel query, weather query, translation (English-to-Chinese translation), course query (course of this semester), score query (all scores in the past years) Several functional designs of these basic functional tests were tested, and three additional tests were added to add a user, delete a user, and modify the information of the user. The design of the intelligent response robot designed in this article with all the test cases implemented, and finally concluded that these test cases all passed the test, which verified the correctness of the design and implementation of the intelligent response robot system platform.

Conclusion

With the design and implementation of intelligent answering robots, more and more merchants have begun to use intelligent answering robots, so that when customers or consumers are asking some basic questions, intelligent answering robots can answer customer questions. Effectively save the time of the merchant, and the customer's question can also be answered in the first time.

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