# SpeechRobot

## —HCI Final Project

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# 1. Introduction

SpeechRobot is a very nice app on which you can chat with a robot just the same that you use the Siri with iPhone. Of course it is not as powerful as the Siri and it is just an example to let you know how SpeechRobot is. And I call the robot “Deelu”, and he is male.

There two ways for users to input their words. One is to type their words and press the “Send” button, the other is to press the button left beside the text field and to speak the words to iPhone.But the words he can recognise is only the Chinese.  Once the user words is sent to Deelu, he will make the response and speak his words with mandarin.

Users can ask him to do many things such as checking the weather, finding the interesting news, teaching you to make a meal and offering you the fit tickets of plane or train.



**Two Main Windows**

# 2. Functions

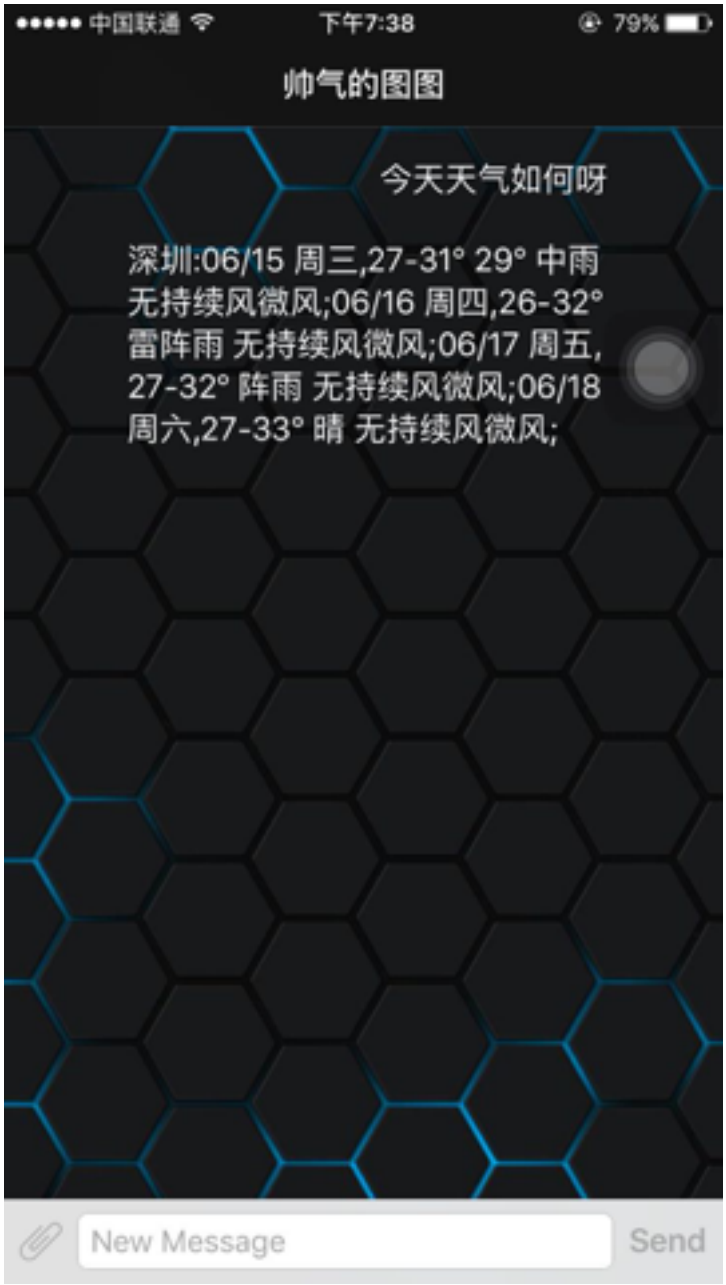
There are many functions provided by the Deelu. But all these functions are based on the chatting with him. So if there is anything you want to ask him for, just talk about it with him.

There are several main functions as follows.

### 2.1 Check for Weather

If you want to know about today's weather, you can just ask Deelu for it. And then he will give you the weather information.

This function is designed for all citizens.



### 2.2 Refer to News

If you want to watch some interesting news, you just tell Deelu that if there any interesting news. And then he will offer some news and give you the link. If he gives you something you are not interested in, you can make the request again and again till you are satisfied.

This function is designed for news readers.

### 2.3 Find the Steps to Make a Meal

One interesting thing is that Deelu can help you to finish a meal. For example, you want to make “鱼香肉丝”, but you don’t know how to do that. Then Deelu will help you find the steps and ingredients to finish this meal.


### 2.4 Find Fit Tickets to Plane and Train

Some businessmen may like this function. The information of tickets to plane and train will be offered timely.

This function is designed for make user's travelling convenient.


### 2.5 Translation

Although Deelu can't speak in English, it still knows about English.

Students may like this function. It can help users with the words which they do not know their meanings.

This function is designed to help people study language.


# 3. Implementations

### 3.1 Compile Environment and Installation

This app is made on Xcode which is an IDE to developed Apple softwares, and this IDE can only be installed on Mac.

This app can only run on iPhone, not in iPad or any other mobile devices. But you can not get this app through the App Store, because I did not submitted it on. The only

way to get this app is that you get the whole Xcode project, which name is "HCI_SpeechRobot", connect your iPhone with Xcode, and run code in iPhone. Only in this way, the app will be shown on your iPhone.

### 3.2 SDK, API and Open Source Frameworkds

1. SDK of Voice Recognition, Listener and Speaker

I choose to use the "讯飞" voice SDK. It is very powerful and contains many functions including voice listener, synthesiser, recogniser and so on. With this SDK's help, this app's voice function can be realised.

2. API of Smart Robot

This robot's API is Turing, which means Deelu is completely a Turing Robot. So Deelu can do all the thins that Turing Robot can do. And this API is totally free.

Turing Robot has realised its technique support for NAO Robot, connecting it to Turing Robot which does best in Chinese semantic recognition and equipping it with a much more intelligent "smart brain" .

3. Alamofire

Alamofire is an HTTP networking library written in Swift. This is used to call the Turing Robot's API.

4. JSQMessagesViewController

JSQMessagesViewController is a framework written in Objective-C, which is used to build the message views. In this app, the chat view is realised with this framework.

5. SwiftyJSON

This app is written in Swift, and Swift is very strict about type. But although explicit typing is good for saving us from mistakes, it becomes painful when dealing with JSON and other areas that are, by nature, implicit about types. So this library is used to help developers to handle JSON data conveniently.

### 3.3 What this App Actually Does

1. User Input and Send

There are two ways for user to input the sentence. When user chooses to type words into textfield and press the send button, which is simple, what he typed will be sent to the Turing Robot through the API. When he chooses to speak to the robot, what he said will first be transferred to Chinese sentence, and then this sentence will be sent.

2. Robot Responses

Once the sentence is sent to the Turing Robot, he will response. What I get is JSON data. And this JSON data is pretty strange. The response information is not in the Value, but in the Key. So it is a little bit difficult to parse this data. But once the parse is successfully completed, the response information is gotten.

3. Make the Robot Speak

The response sentence is clear and in Chinese. But it just some words, but Deelu should read it. So the last thing is to show the response sentence on the window and make the Deelu speak it out.

### 3.4 Short Introduction of Code

The design mechanism of this project is MVC.

M(model): this part is more about data structure and algorithm, including TuringRobot and HandleJSON.

V(view): this part is about the app window, which is the Main.storyboard in this project.

C(controller): this part takes response to control views handle the logic of views, including ChatViewController and EnterViewController.

| Class | Short Specific Descriptions |
|---|---|
| `ChatViewController` | Control the logic of the chat view |
| `TuringRobot` | Take response to transfer data to Turing Robot |
| `HandleJson` | Used to parse the Json data |
| `EnterViewController` | Control the logic of the initial entering view |