COMP3320 Electronic Commerce Technology

Lab 6 Chatbot Design

Deadline: April 22 23:59

Overview

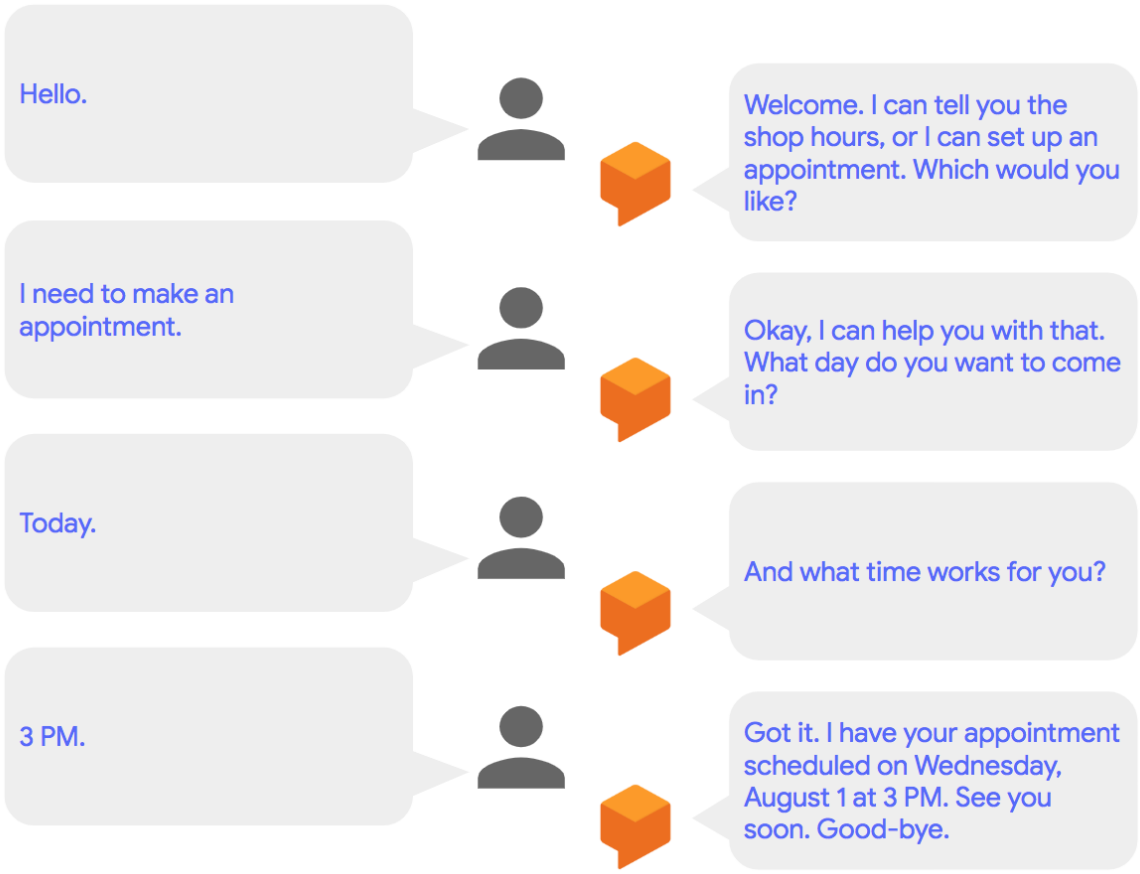
This tutorial walks through the process of building an agent from scratch while following the best practices in conversation design. We use most of Google Dialogflow's key components and features to build an agent that can provide the following services for a bike shop:

- Tell the user the hours of operation.
- Help user to order a T-shirt from the shop.

Objectives

The lessons in the tutorial include:

- Using Dialogflow to build a working agent from scratch.
- Understanding and applying the best practices in conversation design.



Create New Agent

1. Create a new agent called “ShopAgent”.
2. Update the Default Welcome Intent. Delete all the default responses. Add a new response:
   - `Welcome. I can tell you the shop hours, or I can set up an appointment. Which would you like?`
   - `Welcome. I can tell you the shop hours, or I can make an appointment. What can I do for you?`
   - `Hello there. I can tell you the shop hours, or I can schedule an appointment. How may I help you today?`
3. Save and test it yourself.

Create a custom intent

We want the shop agent to perform two tasks:

- Inform customers about the hours of operation
- Schedule appointments for customers

Let's first create an intent that can inform users about the hours of operation for the shop. We can start by writing a sample dialog for this intent:

User: When are you open?

Agent: We're open from 9 AM to 6 PM every day. Is there anything else I can do for you?

To create an intent that can handle this dialog, follow these steps:

1. Create a new intent named *Hours*.
2. In the Training phrases section of the *Hours* intent, enter the following training phrase:
   - When are you open?
   - Are you open today?
   - How late are you open on weekends?
   - When do you close?
   - What time do you open tomorrow morning?
   - Are you open now?
   - Business hours.
   - How early can I drop in?
   - Tell me your opening hours.
   - What are your hours?
   - How late can I come in?
3. In the Responses section, enter the following response in the Text response table: “We're open from 9 AM to 6 PM every day. Is there anything else I can do for you?”

Question 1: (15 marks)

Ask a different question on the opening hour to get a correct response.

Capture the simulator screen as the answer of question 1.

Customize the fallback intent

A fallback intent can prompt users to form utterances in a format that the agent can understand.

1. Update the Default Fallback Intent response to:
   `Sorry, did you want to hear our hours, or set up an appointment?`

The prompt question in the fallback response guides users to provide a recognizable utterance. The agent should expect one of the following utterances from the user: "I want to know the hours" or "I want to set up an appointment".

It is a best practice to provide a reprompt that typically combines an apology with a condensed reiteration of the original question.

Create an intent with parameters

Consider the case that the user says, "I need to make an appointment at 3 PM today". It contains important information, "3 PM" and "today", that indicates what time and date the user wants to visit the shop. The agent's response includes the time and date information mentioned in the user utterance: "Got it. I have your appointment scheduled on Wednesday, August 1 at 3 PM. See you soon. Good-bye."

For us, identifying important pieces of information from utterances is simple; for machines, however, it is a complex task. We need to give intents the ability to extract important information, parameters, from user utterances.

Extract information using entities and parameters

Dialogflow uses *entities* and *parameters* to extract targeted information from user utterances and convert it to a set of parameters, which then can be processed by other functions or systems to perform various tasks.

To create a new intent with parameters, follow these steps:

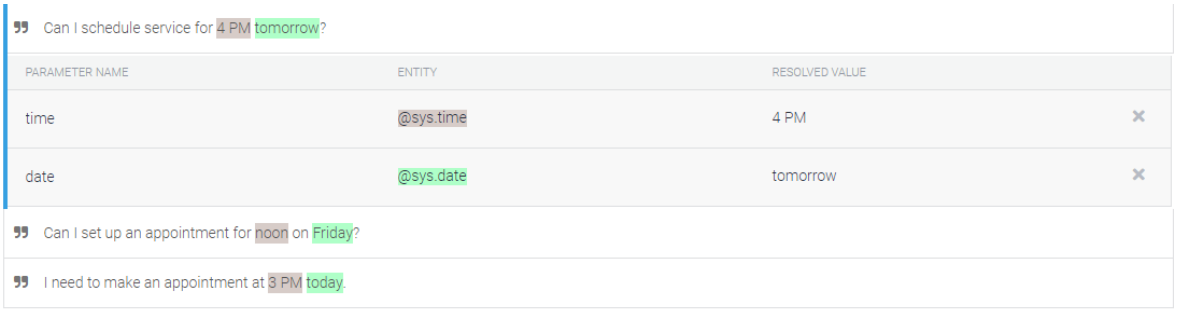
1. Create an intent named *Make Appointment*.
2. In the Training phrases section, add the following training phrase:

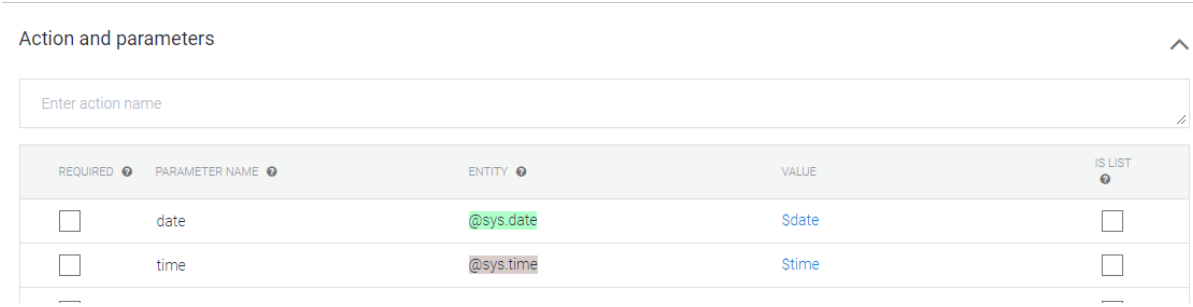
   `I need to make an appointment at 3 PM today.`

   `Can I schedule service for 4 PM tomorrow?`

```
Can I set up an appointment for noon on Friday?
```

3. In the Action and parameters table, verify that the system entities @sys.date and $sys.time have appeared. If not, you should manually remove tag prompted by the system label it like:





4. In the Text response table, add the following response phrase:

```
Got it. I have your appointment scheduled on $date at $time.
See you soon. Good-bye.
```

Obtain required parameters using slot-filling

So far, all of the training phrases contain the time and date information: "*3 PM today,*" "*4 PM tomorrow,*" and "*noon on Friday.*" However, in the real world, user utterances may not always include all the necessary parameters.

1. Add the following training phrases:
   - `Can you fix my road bike?`
   - `My bike is broken.`
   - `I'd like to get my bike fixed, I have a mountain bike that needs servicing.`
   - `I need to fix my bike today.`
   - `I'd like to schedule an appointment on this Thursday.`
2. In the Action and parameters table, check the REQUIRED boxes for the parameters $time and $date. A column called PROMPTS is created.
3. If the $date parameter is located underneath the $time parameter in the table, drag up the row of the $date parameter above the $time parameter. (The placement in the table determines the order in which the prompt questions are asked.)
4. For the $date parameter, click the link Define prompts under the PROMPTS column and add the following prompts:
   - Okay, I can help you with that. What day do you want to come in?
   - Sure, what day are you coming in?

- Okay, what day will work for you?

5. For the $time parameter, click the link Define prompts and add the following prompts:
   - And what time works for you?
   - What time?
   - Now, what time do you want the appointment?
6. Click SAVE.

Question 2: (15 marks)

Test the slot-filling setup using the simulator in the Dialogflow console.

Say: “hello”, “I want to fix my bicycle.”, “Next Friday”, “2pm”.

Capture the simulator screen as the answer of question 2.

Final Demo

Create a chatbot to handle an order request for “buying a T-shirt” (create an intent). When a user wants to make a purchase, the chatbot should ask about the size (S, M, L or XL using required parameters) if the user didn’t specify it. After re-confirming the size with the customer (using parameters in response), the chatbot should follow-up to ask the delivery address (using follow-up intent).

Question 3: (15 marks)

Capture the simulator screen for your final demo.

Provide a URL for your demo.

Question 4:

The chatbot we built uses the NLP technology.

(a) NLP can also be used in e-marketing. Why is it useful? (20 marks)

(b) Briefly explain why NLP can be used to predict the stock price. (20 marks)

(b) What are the other applications of NLP in e-commerce? Give 3 examples. (15 marks)

Reference:

https://cloud.google.com/dialogflow/es/docs/tutorials/build-an-agent

End of Lab 6