

MINING BUSINESS DATA

Build better Dialogflow chatbots

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Implementing boolean logic in DialogFlow (API.AI) intents

There was a [question on the API.AI forum](#) recently where one of the members wanted to do a certain kind of boolean logic operations.

Boolean logic

When you do a Google search, for example, you can combine multiple keywords in a very precise arrangement to get exactly what you want.

For e.g.

"chatbot" AND ("facebook" OR "google")

will return a list of webpages which contain the word "chatbot" and contain either "Facebook" or "Google".

This is a good example of boolean logic - a combination of OR and AND (and even NOT) clauses to combine conditions. (In the case of web search, the condition is the presence of a certain word in a web page).

Example intents

Suppose the user says

1. I want Italian food in Manhattan
2. I want Italian or Chinese food in Manhattan

3. I want anything but Italian and Chinese food in Manhattan or Brooklyn

Humans can understand these sentences quite easily.

How can we make our chatbot understand them?

The parameters to be extracted

Based on the sentences above, these are the parameters we need to be able to extract so the chatbot can proceed with the order.

1. type = Italian, place = Manhattan
2. type = Italian or Chinese, place = Manhattan
3. type = not Italian and not Chinese, place = Manhattan or Brooklyn


Composite entities

If you are not familiar with composite entities, you can refer to the docs [here](#).

In our case, this is what our composite entities will look like (as an example)

foodtypeexcept

SAVE

☐ Define synonyms  ☐ Allow automated expansion

anything but @foodtype:foodtype-1 and @foodtype:foodtype-2
anything other than @foodtype:foodtype-1 and @foodtype:foodtype-2
Enter value

+ Add a row

Here is an example intent using the composite entity above:

● FoodTypeExceptInPlaceOr

SAVE

⋮

Contexts

▼

User says

Search in user says 🔍 ^

“ Add user expression

@ I will have @foodtypeexcept:foodtypeexcept in @place-or:place-or

Events ?

▼

Results

When the user types a phrase such as "I will have anything other than chinese and italian in brooklyn or manhattan" this is what the response looks like.

USER SAYS

[COPY CURL](#)

i will have anything other than chinese and italian
in brooklyn or manhattan



DEFAULT RESPONSE

*Not available*

INTENT

[FoodTypeExceptInPlaceOr](#)

ACTION

Not available

PARAMETER

VALUE

foodtypeexcept

```
{"foodtype-1":"chinese","foodtype-2":"italian"}
```

place-or

```
{"place-1":"brooklyn","place-2":"manhattan"}
```

You might notice that all the relevant parameters have been extracted as expected.

Now you can add some logic in your webhook to place an order taking into account the personal preferences of your customer.

Want the ZIP file for this agent so you can import it into your API.AI console and use it as a starting point for your own work? Get it from my [MBD Resources](#) course (chapter 8)



About Aravind Mohanoor

I am a DialogFlow consultant/trainer with a background in Natural Language Processing and Machine Learning.

I help businesses prototype/design/build DialogFlow chatbots. [Click here](#) if you are interested in working with me.

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