

Introduction

A chatbot is a conversational user interface, commonly used to

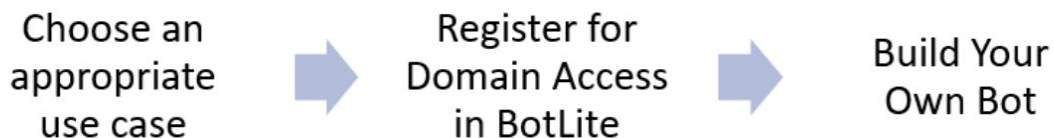
1. Answer queries that do not require any human intervention.
2. Maximize engagement with customers.
3. Automate tasks that improve the productivity of the team and enhance the customer experience.

Botlite Mindmeld allows you to develop a chatbot to automate any task with the user.

Choose An Appropriate Use Case

The first step when deciding to build a conversational application that would help the end user would be to choose an appropriate use case. In many situations, a voice or chat conversation with an agent (bot) can assist the end user to find information or accomplish a task. If you can answer below-mentioned questions (Questions are referred from Mind-meld original documentation) before selecting a use case, you should consider that use case and build a conversational bot.

1. Can your users feel that they are talking to a real human while they are conversing with your bot?
2. Can users save their time and accomplish any task by just conversing with your bot?
3. Can a user with a non-technical background understand and use your bot comfortably?
4. Do you think your bot is narrow enough that it is feasible for machine learning models to achieve high accuracy?
5. Do you think your bot is broad enough that users can gain a useful experience for a variety of tasks?
6. Is it easy to collect training data for your bot?



Every conversation with the chatbot is a combination of domains, intents and entities.

Before proceeding to build a conversational chatbot, please take a look through the following section in order to understand these terminologies better.

Terminologies

Intents

Within a **chatbot**, **intent** refers to the goal the user has in mind when typing in a question or comment. In the below examples, the user is conversing with the bot with the intention of greeting and to find weather status.

| User Queries | Intent |
|--|--------------------|
| “Good Morning”, “Good day”, “Hello” | Greeting |
| “How is the weather today”, ”Will it rain today”, ”What is the temperature in Bangalore” | Get Weather Status |

Expressions

Expressions are the phrases/sentences/queries that the user provides to interact with the bot.

Examples :

- 1) Hey, please tell me what is the status of Order number CHGXXXXXXXX?
- 2) What is the weather condition today?
- 3) Hey, I have a doubt

Entities

Entities are the “additional data” required to achieve the intent. They are important words or phrases within a sentence that help achieve a specific task.

Examples :

- 1) “Can you tell me the weather in Bangalore?” - Here, the "location" entity is "Bangalore" and the intent is to “get_weather_info”.
- 2) “I want to know about vacancies for Data analyst roles?” - Here, the "job_type" entity is "Data Analyst" and the intent is "get_job_vacancies".

Role

This denotes a subcategory in entities of the same type. For example, In the expression “Is there a room available from 21st November to 31st November?”, the “duration_stay” entity can have two roles - ‘checkin_date’ and ‘checkout_date’

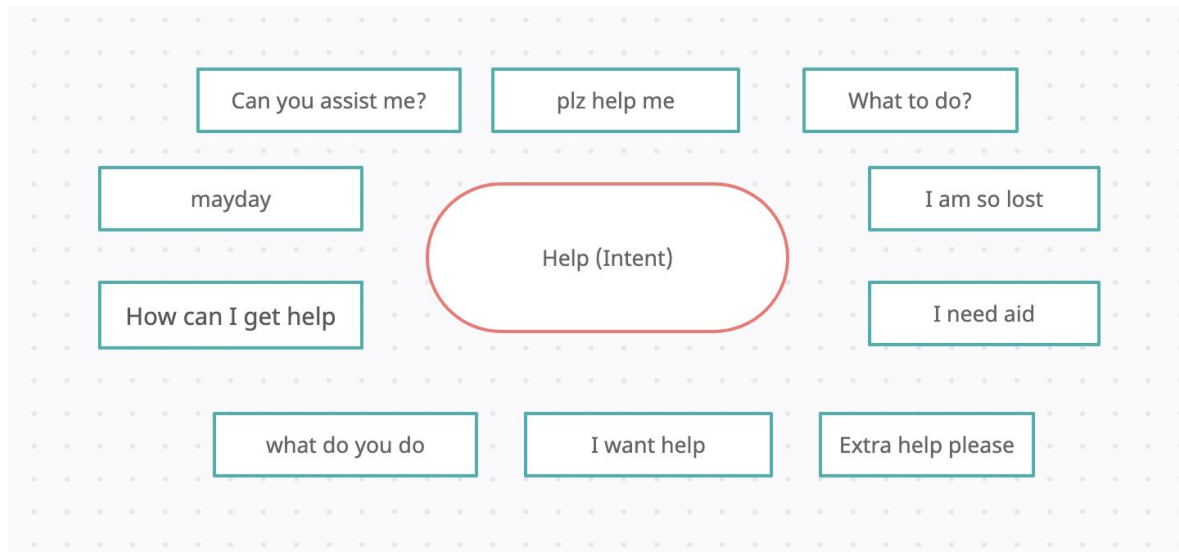
Agents

In Botlite, bots are also referred to as agents. They are synonymous.

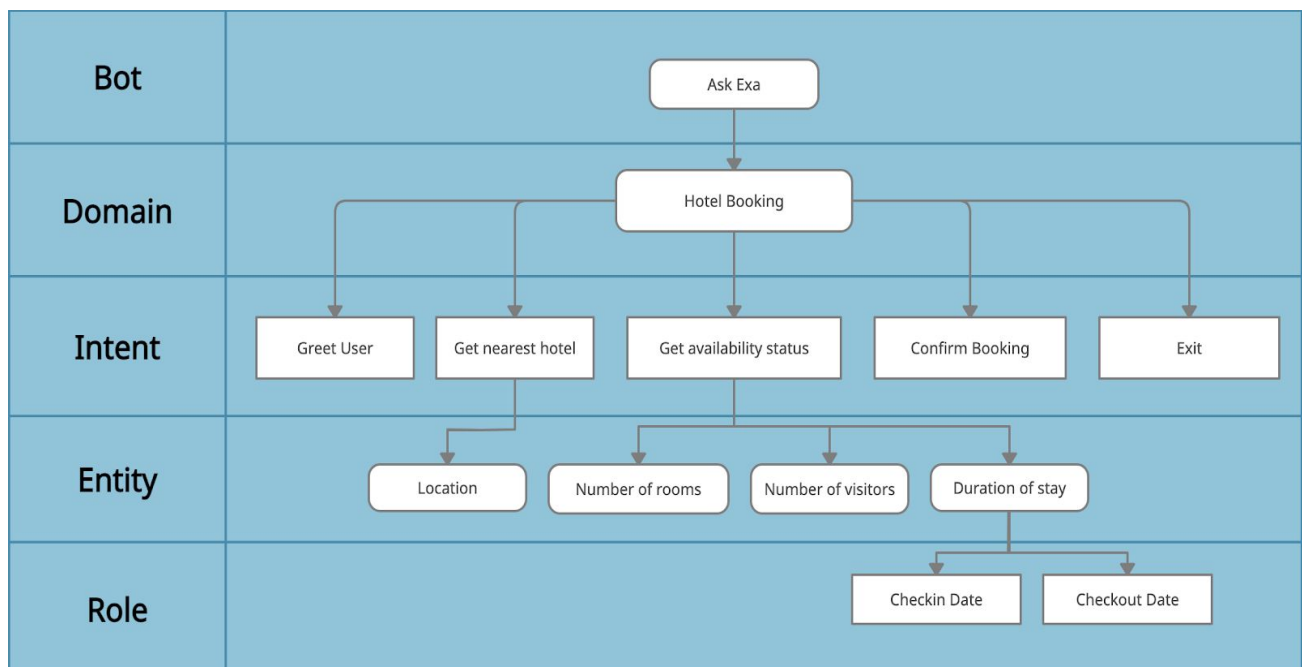
Correlation between expressions and intents

Every expression has intent associated with it. A given intent can have unlimited expressions.

Example: In the following diagram, The user can ask for “**help**”(intent) from the bot in any number of ways and all the expressions have the same intent.



Correlation between domains, intents, entities



Creation of bot

Register for Domain Access in BotLite(for new users):

Once you are ready with the use case, the next step is to register with the BotLite framework. When you log into the BotLite application for the first time, you will not have access to any Bots (Agents) / domains. The register page helps you gain access to specific domains. The botlite team captures the justification for this access for auditing purposes. Follow the steps below to get the required access:

1. The first select box on the screen can be used to create the user required domains. You can create a new domain by adding the new domain name in the box as shown below. If you are testing out the framework for the first time, creating sample bots or POCs, it is recommended to create a new domain in the format "test_*" for ease of maintenance. Please note that domain name should be in lower case, should not contain any spaces or special characters other than underscore.
2. You should also add proper description on how the bot is to be used, and then click on the "Create Domain" button as shown below:

Register your Domain

Welcome Shibani Hegde

Create your own domain

Create Domain

On successful submission of creation, a pop up will be displayed and you will be redirected to the BotLite application. You can now build your own bot.

Domain Management for a Configured Domain

Domains are tags attached to intents, entities, and bots(agents) to group them, especially for access. It could be org-based (eg: HR), team-based (eg: eDSS-SUPPORT) or even application-based (eg: PRRQ). The domain relationships are many-to-one mappings. For example, a bot(agent) can be a part of many domains. A domain can have only one bot(agent). Only users tagged to a domain will be able to access the intents, entities, and bot(agent) of that domain.

Domain Management

In the domain management tab, Following are the functionalities you can perform

1. View all the domains that have been created so far.
2. Create a new domain by clicking on the Add New Domain button. This will open the below window. The domain name and the description can be added for the same.

Add New Domain

Domain Name* ?

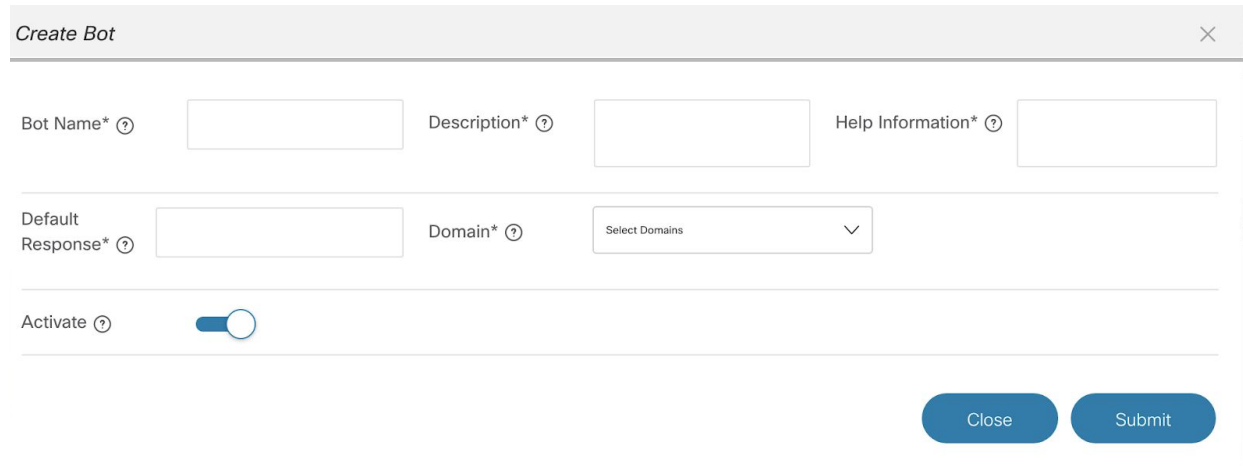
Domain Description* ?

Submit

3. Activate / Deactivate a domain: On the page, you can do this by clicking on the Manage Domain which will open a window with the activate switch. By default, the domain will be activated.

Creation of Bot

After domain management, the next step is to create a bot. After you click on the Bot tab, the first step is to choose a domain you would like to create a bot for. On clicking on the “create bot”, a modal opens as shown below.



The screenshot shows a modal window titled "Create Bot" with a close button (X) in the top right corner. The form contains the following fields and controls:

- Bot Name*** (required, with a help icon) - text input field.
- Description*** (required, with a help icon) - text input field.
- Help Information*** (required, with a help icon) - text input field.
- Default Response*** (required, with a help icon) - text input field.
- Domain*** (required, with a help icon) - dropdown menu with the text "Select Domains" and a downward arrow.
- Activate** (with a help icon) - a toggle switch that is currently turned on (blue).
- At the bottom right, there are two buttons: **Close** and **Submit**.

This modal can be used to provide all the information required to create a new bot.

- You can add a unique **name** for the bot in the Bot Name field. You should also provide a **brief description**.
- You should also provide **help-information** for the bot. The help text box can be used to give tips to the Webex Teams end user to identify the purpose of this specific bot.
- You should also add a **default bot response** in the text field so that the bot can respond to the end-user even when it is unable to identify the exact user query, probably asking the end-user to raise a case or contact a POC.
- The **domain** to which the bot should be tagged would be auto-populated according to the earlier selected domain.
- On the page, You can see the **activate** switch. By default, the bot will be activated. However, if you wish to deactivate the bot while creating this can be done by clicking on the activation switch to deactivate it.

Once all these fields are completed, You can click on the submit button. The bot will be created successfully. You can also edit the following information by clicking on View/ Edit

Creation of Entities

Entity:

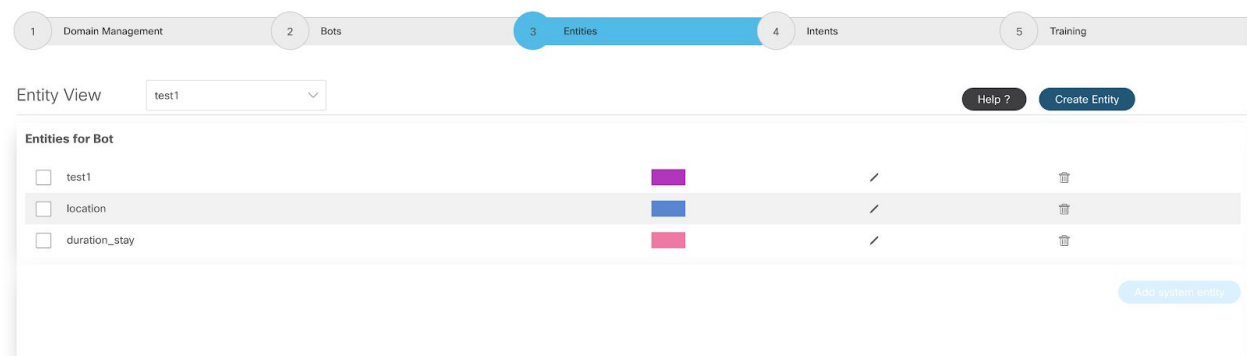
A word or phrase that provides information necessary to fulfil a particular intent. For example, a “book_flight” intent could have a “location” type for entities like ‘Miami’.

Role:

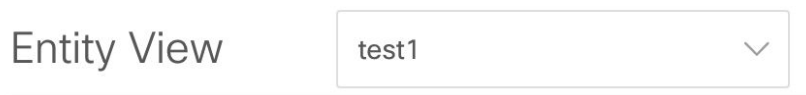
A label that specifies a sub-category in entities of the same type. Roles are used when identically typed entities need to be interpreted differently in different contexts. For example, “location” entity in Book_flight intent can have an “origin” role and “destination” role.

Create Entities

On load, the entity screen will look like the image below:



Choose an agent(bot) for which this entity is being created from the dropdown as shown below:



On click of the create entity button, a modal opens as shown below. You can hover on the “?” icon present beside every field, to know more about the field. This modal can be used by you to provide all the information required to create a new entity.

×

Add Entities

Add your entities or characteristics for your Bot

Entity Name *[?]

Entity Name

Entity Value[?]

+ Add Values,synonyms ie: New York,NYC,NY

Activate

Entity Roles[?]

+ Add Roles

Create

- The **Entity Name** is a mandatory field which is a unique identifier for the entity. It is better to provide the name without any spaces. However, if you provide spaces in between the words, it gets replaced by underscores before saving. For example, if the user's intent is to book a flight from Miami to Austin, “location” becomes the entity.

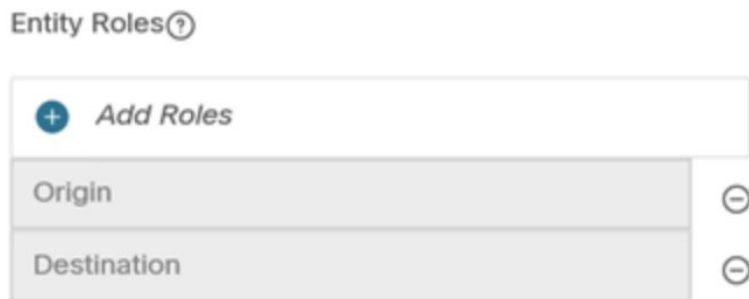
Entity Name *[?]

Location

×

- To add **Synonyms** of the entity name, you can use the Entity Value text box. Once the value is entered, click on the “+” icon to get the synonym added to the list of values. In the example intent of booking a flight from Newyork to Miami, Newyork can also be referred to as NYC, NY, New York.
- Users can enter roles for an entity and click on the “+” icon to save them. For instance, book a flight intent with the location as an entity can have two roles, origin and destination.

Once all the required fields are filled out in the entity modal, you can click on the create button to create an entity.



Colour Coded Entities:

When the entities are created, they are automatically tagged with a colour (generated randomly). This colour denoted will help you identify these entities when it's tagged to the intents in the expressions tab.

Other Functionalities:

You can also edit the entities created by clicking on the pencil icon. This will open the same window as above with pre populated values which can be edited.

You can also delete the entities created by clicking on the delete icon

| | | | | |
|--------------------------|----------|---|---|---|
| <input type="checkbox"/> | test1 |  |  |  |
| <input type="checkbox"/> | location |  |  |  |

Creation of Intents

Intent:

An intent represents a mapping between what a user says and what action should be taken by your Bot Logic. Within a chatbot, intent refers to the goal that your end user has in mind when typing in a question or comment. Intent is a combination of Expressions and Actions. For instance, in the text,

1. “*What is the weather in San Jose?* “, **Weather** is **Intent**
2. “*What is the RMA status for Order_Number?* “, **RMA Status** is the **Intent**



Intent View

--Select Domain--
✓ testing_domain
test1_domain
final_testing

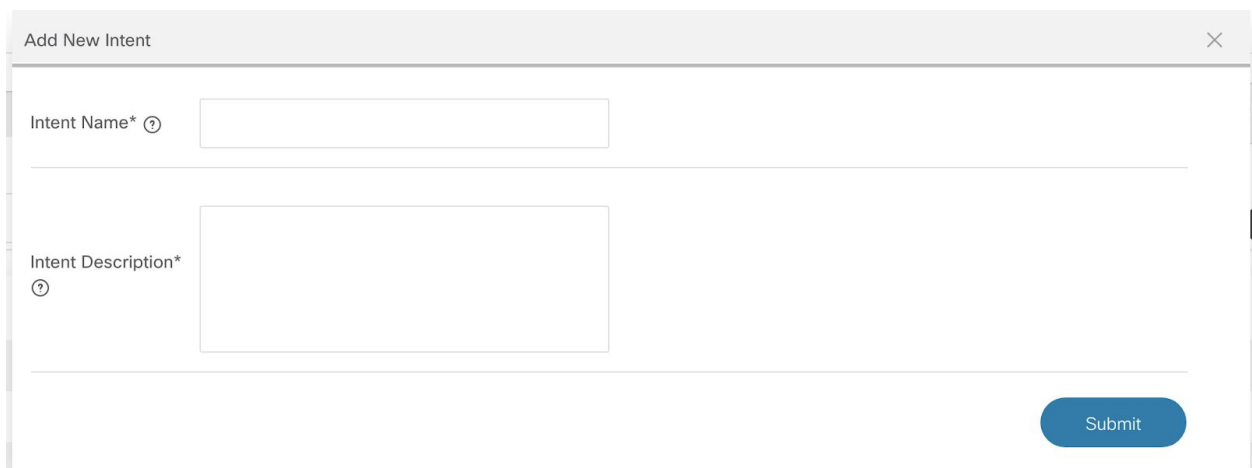
greet

help

approve

unknown

You can create new Intents by clicking on the Add New Intent button. This will open a modal as shown below.



Add New Intent

Intent Name* ?

Intent Description* ?

Submit

For example, To create an intent for the bot 'test' which will provide **weather** information. Type **weather** (Intent) in the text box as shown above and press enter.

Multiple Intents can be added in the similar way. Also, intents can be deleted on clicking on the delete icon

Once an Intent is added, the next step is to add expressions for Intents.

Expressions

It is the way a user might frame his question to an agent (bot). “What are my open incidents?” could be an expression with an intent of viewing the user's open incidents. An intent can have multiple expressions.

Add Expression

On click of any of the intent, a pop up is displayed to add expressions.

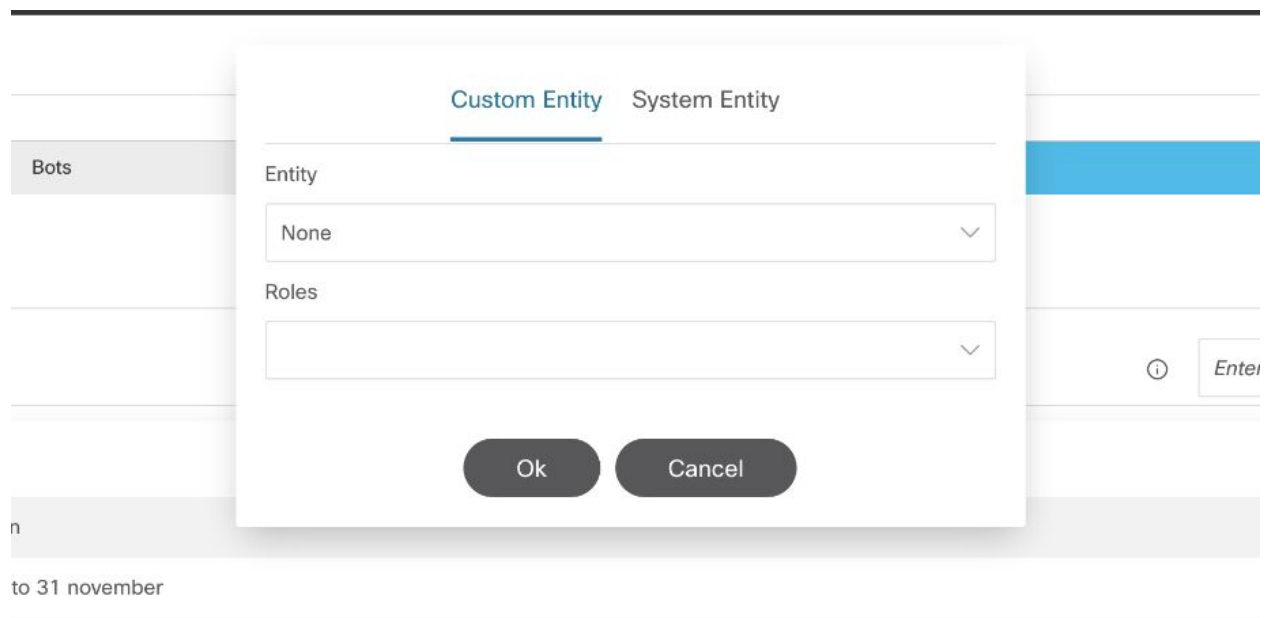
The screenshot shows the Cisco BotLite interface. At the top, there's a navigation bar with tabs: 1 Domain Management, 2 Bots, 3 Entities, 4 Intents (selected), and 5 Training. Below the navigation bar, the 'Expressions' section is active. It shows the intent 'Intent - book_hotel'. A message box states: 'The minimum number of expressions required for an intent is 5'. Below this, there's a list of expressions. One expression is listed: 'book a room in the Grand Palace Hotel' with a delete icon.

You can add expressions by typing them in the text box shown above. Multiple Expressions can be added in the similar way. Please note that a minimum of 10 expressions need to be added for every intent created. To train the model better, it is highly recommended that you add a lot of expressions that your users may provide while chatting with the bot. These expressions can be deleted by clicking on the delete icon.

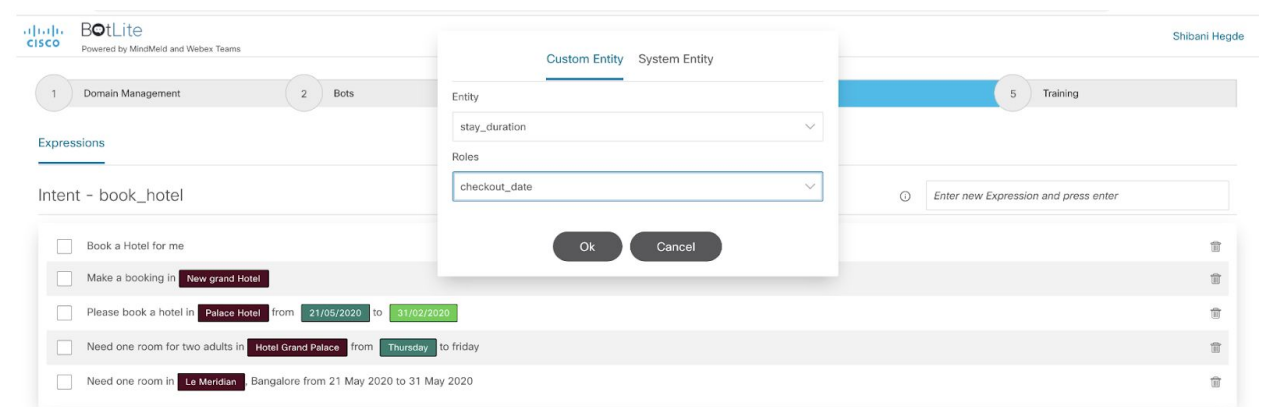
Identify Entities and Roles in the Expression

After adding expressions for an intent, the next step is to identify entities and roles in that expression. This is a very important step in training the model. For example, A customer can ping the bot with the following expression "book a room in the Le Meridian from 21st November to 31st November", We want the model to understand that the entities would be “hotel_location” and “duration_stay”. To train the model to automatically identify the entities and roles, you need to tag the expressions added above to their respective entities and roles. To tag an entity in the

expression, you need to highlight the words from the expression. This will open a modal as shown below.



Here, you can tag the expressions to custom entities(created by you) or system entities. You can also identify the role of entities. In the example below, from the expression “Can you Book a room in Hotel Grand Palace from 21st November to 31 November?”,the Entities can be **hotel_name** and **stay_duration**. Also, For the entity **stay_duration**, the values 21st November and 31st November can have the roles **checkin_date** and **checkout_date** respectively



On adding the entities and roles, they are automatically colour annotated to help distinguish between the different entities

Training of the Bot

Training the bot is an important step that makes the bot ready to identify the intent and entities from the user question. In the previous steps, you have created Entities, Intents, added roles, and mapped intents to entities, roles. In this step, the NLP classifier available in the backend, creates files that will clearly identify intent, entities, and roles mapped from the expressions

Select the bot you want to train and then click on the 'Train' button. In a few minutes, the training will be done and the accuracy of the model will be shown. The accuracy really depends on how much data (expressions) you have configured and also on the quality of the data.

Train Your Bot

Now that you have set the criteria for your Bot, it is time to teach your Bot

Continue With Your Bot

Select the Bot botadmin_testing_bot

[TRAIN](#) [Advance Settings](#)

| <input type="checkbox"/> Model Id | Last Trained At | Accuracy Score | |
|--|---------------------|----------------|--|
| <input type="checkbox"/> 20201118T133822 | 2020-11-18 13:39:05 | 98.24 | |
| <input type="checkbox"/> 20201118T133739 | 2020-11-18 13:37:46 | 99.59 | |
| <input type="checkbox"/> 20201015T190900 | 2020-10-15 19:09:12 | 95.54 | |
| <input type="checkbox"/> 20201015T190824 | 2020-10-15 19:08:32 | 99.46 | |
| <input type="checkbox"/> ... | ... | ... | |

[Delete](#)

Test your Model

20201118T133822

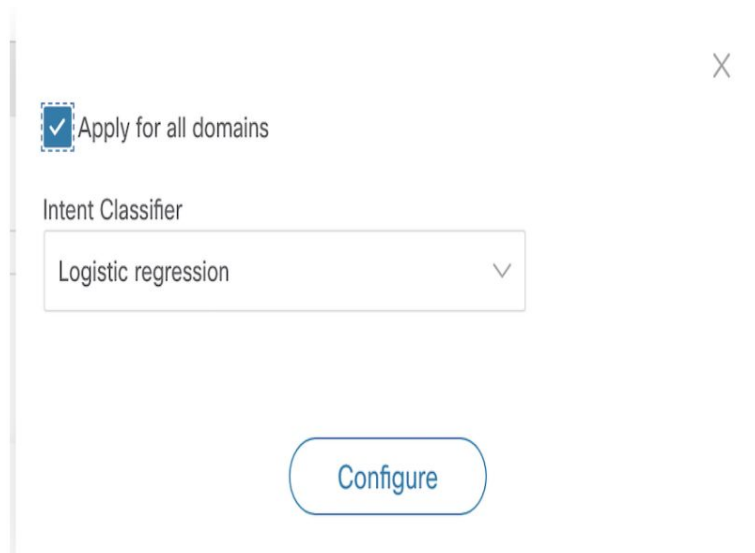
Expression

[SEND](#)

```
{
  "result": {
    "domain": "testing_shibanni_test",
    "entities": {
      "intent": "bookflights",
      "text": "I want to book flight"
    }
  },
  "status": "success"
}
```

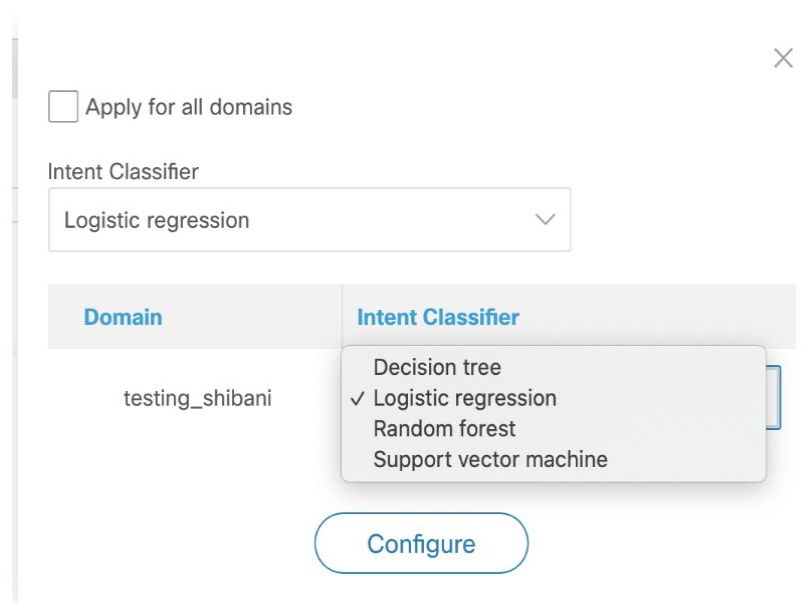
Advance Settings

You can change the classifier used to train the model by clicking on the advanced settings. This will open a modal as shown below:



A modal window titled "Advance Settings" with a close button (X) in the top right corner. It contains a checkbox labeled "Apply for all domains" which is checked. Below it is a dropdown menu labeled "Intent Classifier" with "Logistic regression" selected. At the bottom is a "Configure" button.

Here, you can select whether the training classifier needs to be applied to all domains or to a single domain by clicking on the checkbox. On deselecting the checkbox, the following option pops up:



A modal window titled "Advance Settings" with a close button (X) in the top right corner. It contains an unchecked checkbox labeled "Apply for all domains". Below it is a dropdown menu labeled "Intent Classifier" with "Logistic regression" selected. A table is displayed below the dropdown, showing the classifier selection for a specific domain. The table has two columns: "Domain" and "Intent Classifier". The first row shows the domain "testing_shibani" with a dropdown menu open, listing four options: "Decision tree", "Logistic regression" (which is checked), "Random forest", and "Support vector machine". At the bottom is a "Configure" button.

| Domain | Intent Classifier |
|-----------------|--|
| testing_shibani | <div>Decision tree</div> <div>✓ Logistic regression</div> <div>Random forest</div> <div>Support vector machine</div> |

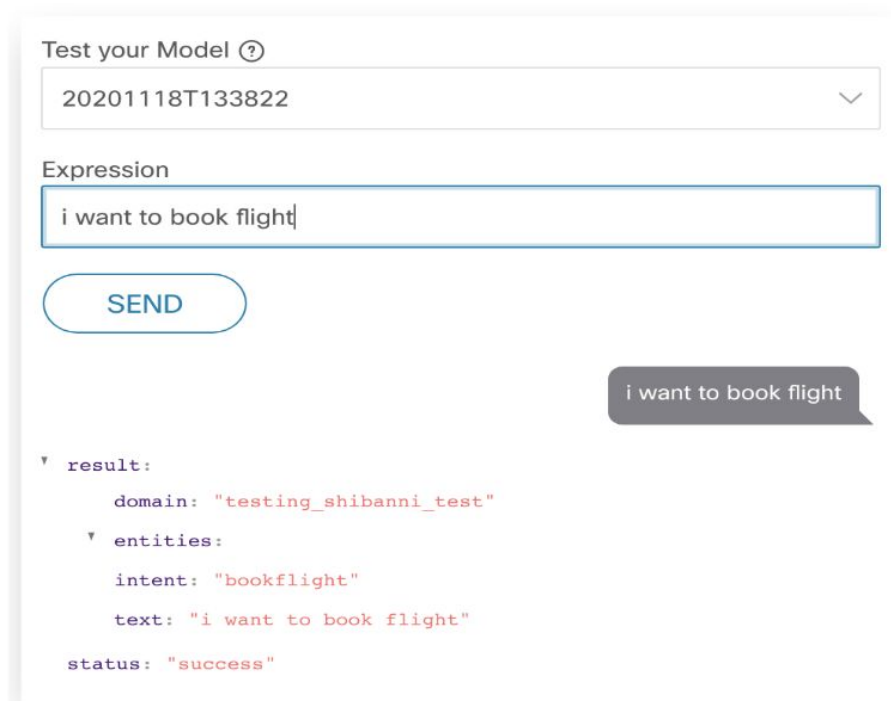
You can select from any of the given 4 classifiers. Please note: You can train the bot multiple times but it's always the latest trained model that gets deployed to the bot.

For more information on domain classifiers, refer

https://www.mindmeld.com/docs/userguide/domain_classifier.html

Testing

In order to find out how the model is able to identify the entities and intents, you can use the Test your Model functionality. In the modal, you can select the model you want to test and give any user query you wish to test it for. Here's an example.



The screenshot shows a web interface for testing a model. At the top, there's a section titled "Test your Model" with a help icon. Below it is a dropdown menu showing the model ID "20201118T133822". Underneath is a text input field labeled "Expression" containing the text "i want to book flight". A blue "SEND" button is positioned below the input field. To the right of the button is a grey speech bubble containing the same text "i want to book flight". Below the speech bubble, the JSON result of the test is displayed:

```
{
  "result": {
    "domain": "testing_shibanni_test",
    "entities": {
      "intent": "bookflight",
      "text": "i want to book flight"
    },
    "status": "success"
  }
}
```

Now, the creation of bot is completed. You can successfully use the bot now.