

# Hackbot Documentation

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## Introduction

Today many chatbots are replacing real live agents from small web pages to enterprises, since they are readily available, cost less and can do all the repetitive tasks that a human does without any effort. Although there has been a great advancement the chatbots also fall short in some

aspects compared to a real agent, such as in terms of understanding the customer, providing customized recommendations and there has also been a lot of manual work in creating these bots by uploading each and every possible questions a customer might ask and typing out the solutions.



This hackathon hosted by EXL focuses on removing the disadvantages posed by the chatbots by using NLP for better understanding customers, use AI and ML for providing recommendations, and also automating the process of creating Q&As that a customer would expect

by a single click of uploading a web URL.

## The solution

The Hackbot built using the Power Virtual Agent is an intelligent conversational bot capable of providing personalized service and resolving customer issues quickly by leveraging products offered by Microsoft. The Hackbot uses default topics and trigger phrases for greeting, ending conversations etc. which was built using mass training using natural language processing on

bot's data and thus makes the process of building a bot from scratch much easier since we only have to focus on the business logic required, this feature also allows the bot to understand unstructured and non-predetermined sentences as replies.

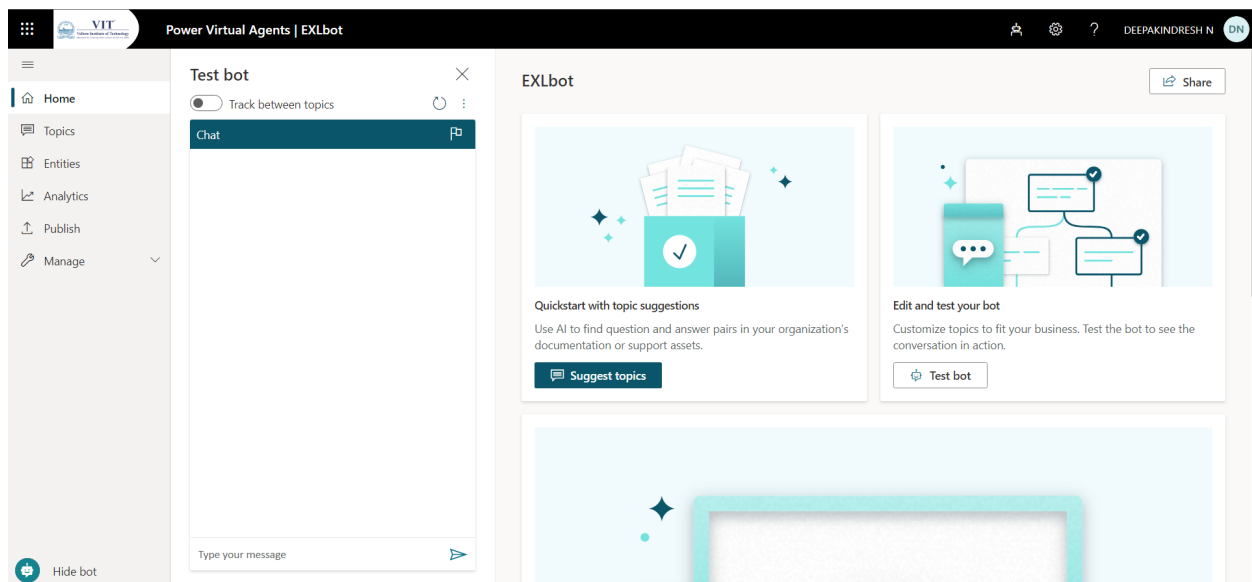
The Hackbot can also take in web URLs of websites such as FAQ's page or Brochure page or documents hosted in websites (PDF's) etc. and convert them into topics with Q&As and suggests us to add them into the bot.

It can also connect with REST APIs, carry out CRUD operations on databases such as SQL, be monitored using metrics such as Engagement Rate, Escalation Rate, Abandon Rate, provide messages on Microsoft Teams and also connect to real live agents through third party Power apps such as Skype and Omnichannel, and can be deployed on websites, Facebook, Slack etc.

## Implementation

The Power Virtual Agent GUI enables us to easily build a chatbot from scratch with some default topics to start with as soon as we sign up.

This is the Home page displayed once the sign up process is completed.



This prototype is constructed with reference to food restaurant businesses (KFC, McDonalds) for demo purposes and can be applied to any other business logic within a few days.

## Topics

This page is where we create logic on how the chatbot should collect details or respond to customers based on their queries.

The screenshot shows the 'Topics' page in the Power Virtual Agents | EXLbot interface. The sidebar on the left contains navigation links: Home, Topics (selected), Entities, Analytics, Publish, and Manage. The main area is titled 'Test bot' and includes a 'Track between topics' toggle. Below this is a 'Chat' window with a 'Type your message' input field. To the right, the 'Topics' section is displayed, showing a list of existing topics (63) and suggested topics (0). The list is organized into columns: Type, Name, Trigger phrases, Status, Errors, and Ex. The topics include 'End of Conversation', 'Confirmed Success', 'Confirmed Failure', 'Goodbye', 'Start over', 'Thank you', and four 'Lesson' topics (Lesson 1 to Lesson 4). The 'Status' column shows 'Always on' for the first six topics and 'On' for the 'Lesson' topics, which also have a toggle switch.

Type	Name	Trigger phrases	Status	Errors	Ex
	End of Conversation	No trigger phrases	Always on		
	Confirmed Success	No trigger phrases	Always on		
	Confirmed Failure	No trigger phrases	Always on		
	Goodbye	(67) Bye	Always on		
	Start over	(3) start over	Always on		
	Thank you	(4) thanks	Always on		
	Lesson 1 - A simple topic	(4) When are you closed	On		
	Lesson 2 - A simple topic with a condition an...	(5) Are there any stores aroun...	On		
	Lesson 3 - A topic with a condition, variables...	(5) Buy items	On		
	Lesson 4 - A topic with a condition, variables...	(5) What is the best product f...	On		

Above listed are some of the default topics that are available once a project is created and the choice is ours to either keep or discard them.

Within a topic, the trigger phrase is a very important aspect which activates the particular topic using natural language understanding and thus defining them is essential for each topic, so that this topic can be activated from other topics as well.

←

Goodbye

Trigger Phrases (67)

Bye  
Bye bye thanks again  
Bye for now  
Bye now  
Bye until later!  
Glad to talk to you also. Have a nice  
Good bye

Message

Thanks for chatting with me.

Trigger phrases (67)

Trigger phrases teach the bot different ways someone might ask about this topic. Natural language understanding helps identify a topic based on meaning and not exact words. To start learning, the bot needs 5-10 short trigger phrases. [Learn more](#)

Show writing tips

Add phrases

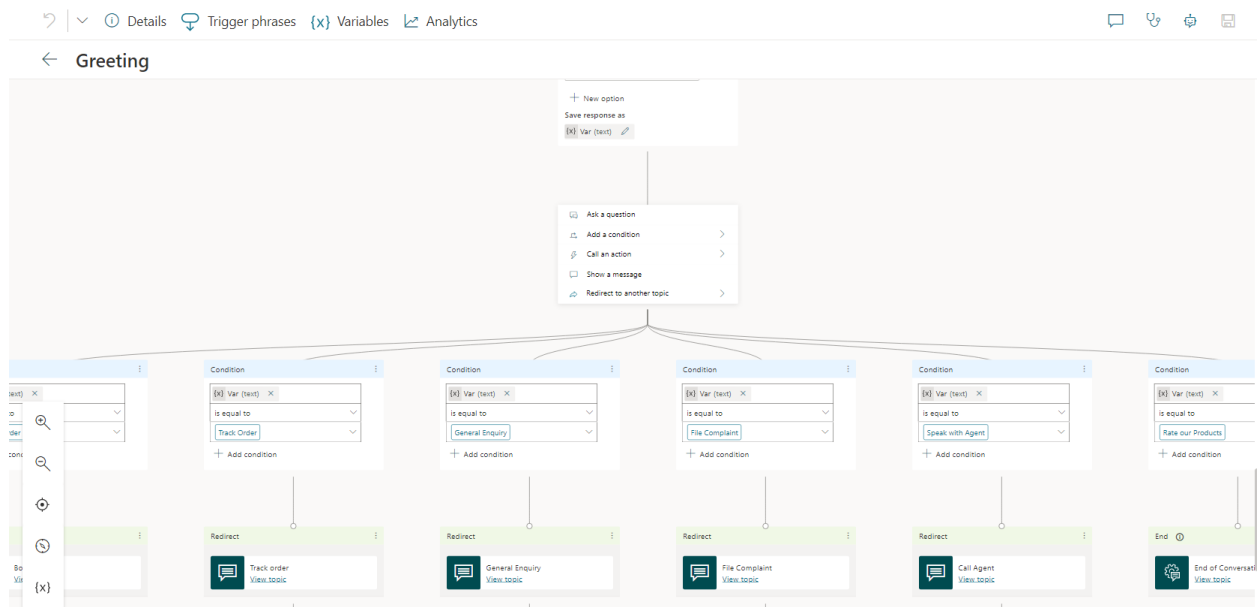
Enter text

+

To add phrases in bulk, paste in line-separated phrases or use Shift+Enter to create line separation

Bye  
  
Bye bye thanks again  
  
Bye for now  
  
Bye now  
  
Bye until later!  
  
Glad to talk to you also. Have a nice day.

After the trigger phase, there are multiple options that you can choose based on the required logic such as ask a question, add a condition based on variables defined in this topic or any other topic, call an action (after designing a flow which will be discussed later in this documentation), show a message, or redirect the bot to some other topic (for example to end of the conversation topic).



## Properties of variables

### Variable properties

#### Name \*


bot. personName

Modifying the variable name will rename it in every topic.

#### Type

Person name

#### Source

 Go to Source

#### Usage ⓘ

☐ Topic (limited scope)

☐ Receive values from other topics

☐ Return values to original topics

☒ Bot (any topic can access)

☐ External sources can set values

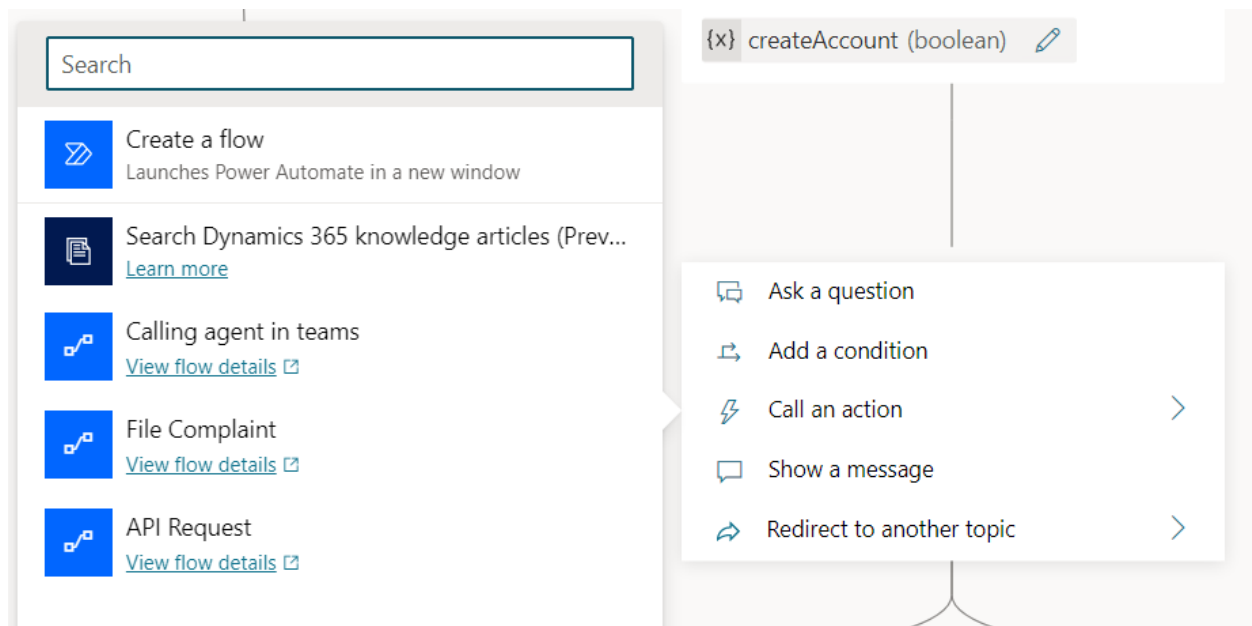
## Entities

Another important aspect of the Power Virtual Agent is the entities where they are analogous to data types where we can define variables as age and the bot uses NLP for example converting the response “I was born on January 2nd 2001” to Age = 21 which is a number. It can extract names from sentences, colors, dates, emails and a lot more.

+ New entity			
Age	Age or a person, place, or thing, extracted as a number	Prebuilt	02/12/2018
Boolean	Positive or negative responses, extracted as a Boolean	Prebuilt	02/12/2018
City	City names, extracted as a string	Prebuilt	02/12/2018
Color	Primary colors and hues on the color spectrum, extracted as a string	Prebuilt	02/12/2018
Continent	Continent names, extracted as a string	Prebuilt	02/12/2018
Country or region	Country and region names, extracted as a string	Prebuilt	02/12/2018
Date and time	Dates, times, days of the week, and months relative to a point in time, extracted as a string	Prebuilt	02/12/2018
Duration	Lengths of time, extracted as a string, in standard TimeSpan format	Prebuilt	02/12/2018
Email	Email addresses, extracted as a string	Prebuilt	02/12/2018
Event	Event names, extracted as a string	Prebuilt	02/12/2018
Language	Language names, extracted as a string	Prebuilt	02/12/2018
Money	Monetary amounts, extracted as a number	Prebuilt	02/12/2018
Number	Cardinal numbers in numeric or text form, extracted as a number	Prebuilt	02/12/2018
Ordinal	Ordinal numbers in numeric or text form, extracted as a number	Prebuilt	02/12/2018
Organization	Names of organizations, associations, and corporations, extracted as a string	Prebuilt	02/12/2018

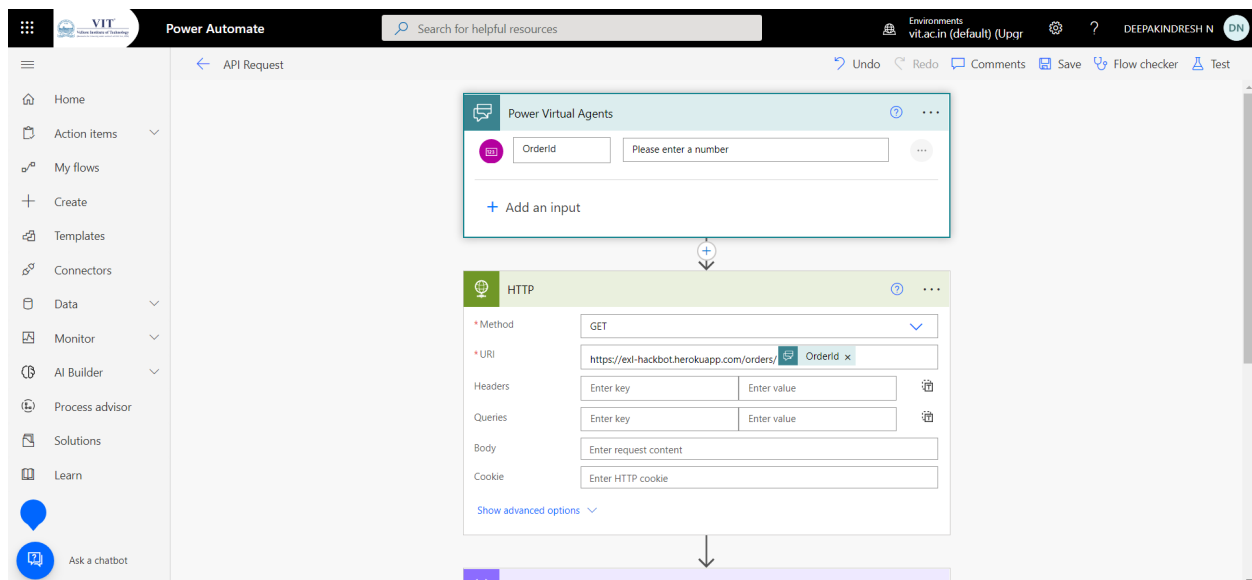
## Actions

An action can be called from within the topics where we can pass variables to a flow and also receive from it. This is how the bot can use third party tools like teams, databases, and APIs.



## Flows (Power Automate)

This is where the definition of the action is created where you can take inputs from the bot and use it to make HTTP requests.



## Message Teams

Calling agent in teams

Undo Redo Comments Save

Power Virtual Agents

Name Please enter your input

Email Please enter your input

+ Add an input

Post message in a chat or channel

\* Post as Flow bot

\* Post in Chat with Flow bot

\* Recipient deepakindresh.n2019@vitstudent.ac.in;

\* Message

Font 12 **B** *I* U [Link] [Image] [Code]

Hi Deepak, [Name x] is a KFC customer who wants to reach out to you. This is his email: [Email x]

Show advanced options

Update Database (Used Excel for demo purposes since SQL is a premium feature)



File Complaint

Undo Redo Comments Save Flow

Power Virtual Agents

Add a row into a table

\* File: /Ext-Complaint Registry.xlsx

\* Table: Table1

Date: Date x

Name: Name x

Subject: abstractsubject x

Cause: cause x

Severity: SeverityLevel x

Show advanced options

Return value(s) to Power Virtual Agents

And return values back to the bot

API Request

Undo Redo Comments

Parse JSON

\* Content: Body x

\* Schema

```
{
  "type": "object",
  "properties": {
    "id": {
      "type": "string"
    },
    "status": {
      "type": "string"
    },
    "cid": {

```

Generate from sample

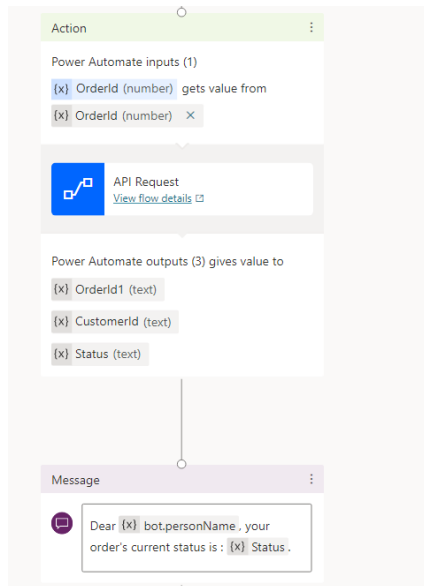
Return value(s) to Power Virtual Agents

Orderid: id x

Customerid: cid x

Status: status x

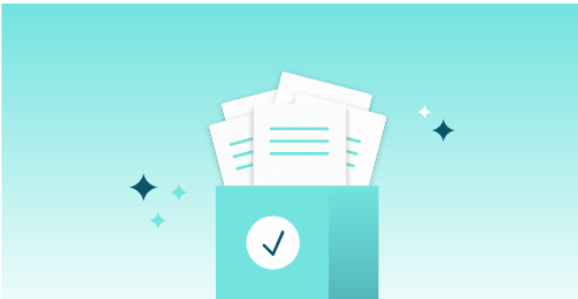
Which can then be accessed and used by the bot



## Suggest topics

This is the best feature where we can automate Q&A creation (for topics) with a single paste of a web URL or a document that begins with https.

## Suggest topics



Get topic suggestions from your web content and online files e.g. PDF, DOCX, or CSV. Start with 3-5 links containing content (such as question and answer pairs or documentation) that you'd like your bot to handle.

To help you author topics more quickly, each suggestion will also include a trigger phrase. [Learn more about topic suggestions](#)















Link to online content

Add

Start

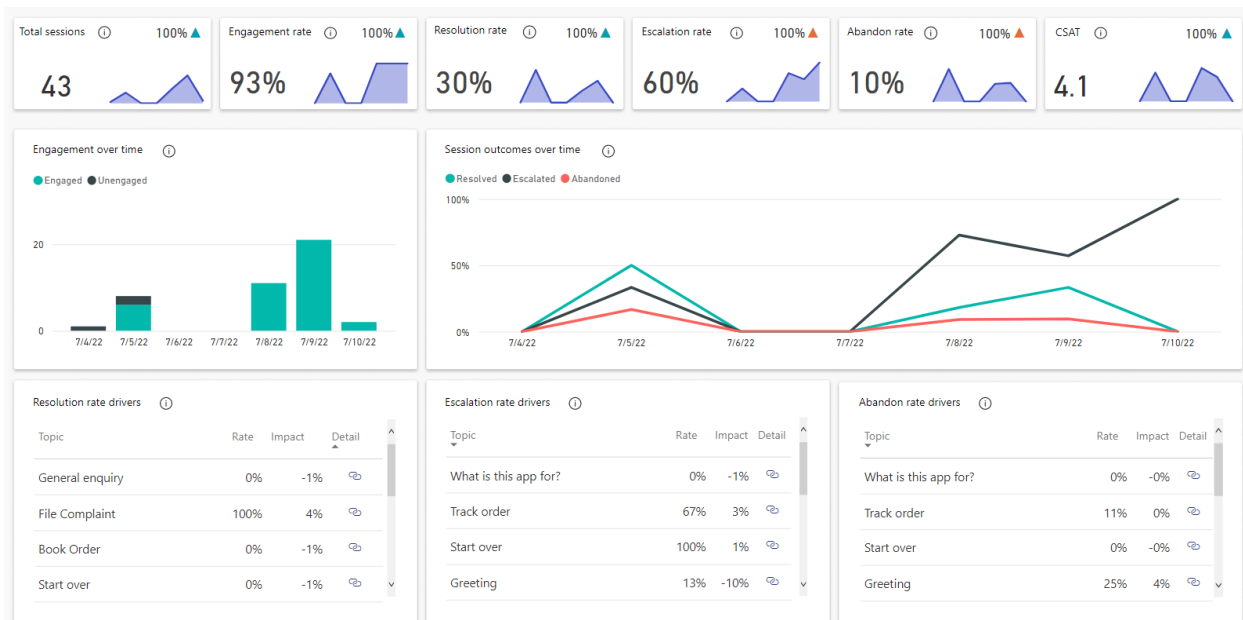
Cancel

Once uploaded the URL click add and then start and wait for a while where you find topic suggestions that can be added to the bot instantly by just a few clicks.

	I have a registration with the McDonald's ap...	<a href="#">(1) I have a registration with t...</a>	<input checked="" type="checkbox"/> On
	Where are McDelivery services available?	<a href="#">(1) Where are McDelivery serv...</a>	<input checked="" type="checkbox"/> On
	Is there a limitation to McDelivery orders?	<a href="#">(1) Is there a limitation to Mc...</a>	<input checked="" type="checkbox"/> On
	What is Order in Advance?	<a href="#">(1) What is Order in Advance?</a>	<input checked="" type="checkbox"/> On
	How do I reset my password if I have lost or ...	<a href="#">(1) How do I reset my passwo...</a>	<input checked="" type="checkbox"/> On
	How will I know when the restaurant receive...	<a href="#">(1) How will I know when the ...</a>	<input checked="" type="checkbox"/> On
	Where can I change my account info?	<a href="#">(1) Where can I change my ac...</a>	<input checked="" type="checkbox"/> On
	If different members of my family order from...	<a href="#">(1) If different members of my...</a>	<input checked="" type="checkbox"/> On
	Can I make changes after I've made my orde...	<a href="#">(1) Can I make changes after I'...</a>	<input checked="" type="checkbox"/> On
	Do you offer discount cards?	<a href="#">(1) Do you offer discount card...</a>	<input checked="" type="checkbox"/> On
	Do you accept McDonald's 'Be Our Guest (B...	<a href="#">(1) Do you accept McDonald's...</a>	<input checked="" type="checkbox"/> On
	Do you accept Accor/Sodexo coupons in Mc...	<a href="#">(1) Do you accept Accor/Sode...</a>	<input checked="" type="checkbox"/> On
	How much time does it take for McDelivery t...	<a href="#">(1) How much time does it tak...</a>	<input checked="" type="checkbox"/> On
	Is McDelivery available 24-hours a day, 7 day...	<a href="#">(1) Is McDelivery available 24-...</a>	<input checked="" type="checkbox"/> On

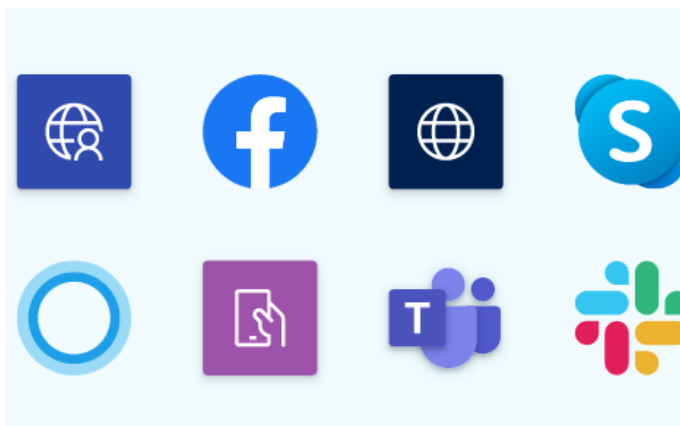
Extracted from Mc Donald's FAQ page.

## Monitoring



The Hackbot can also be monitored and used for analysis to further improve topics where customers have faced issues and abandoned the bot or asked for a live agent etc.

## Deployment



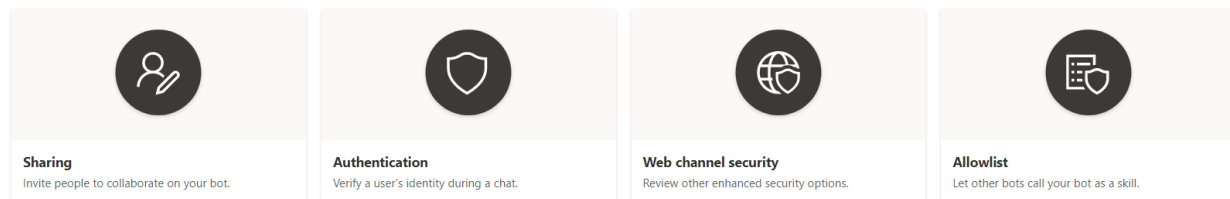
Deployment is easy as a single click and can be deployed to multiple channels other than websites, such as Teams, Facebook, Skype, Slack etc.

## Security

In terms of security as of now the Hackbot allows all traffic for testing purposes but once ready for actual deployment, it can be customized based on needs for example allowing only authenticated customers and HTTPS traffic. Power Virtual Agent also allows collaborative development amongst peers.

### Security

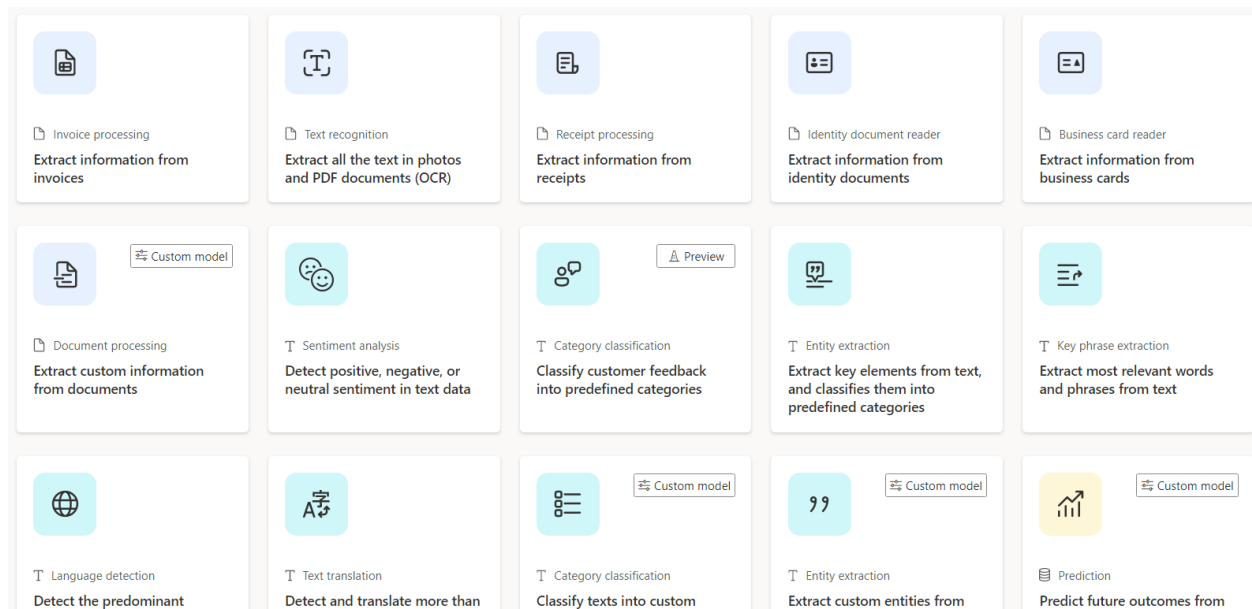
Set up additional security measures for the bot and your users.



## Future Scope

The bot will be able to recommend products based on user and products data using machine learning algorithms and recommender systems, where we can train the models and save their weights and create an api which can be accessed by the bot and used for upselling and cross-selling.

There are also various other third party tools and features such as AI builder which can be leveraged to take image inputs from customers for example forms or tickets and be used for image recognition or OCR.



## Conclusion

The Hackbot is capable of bridging the gap that has been established by basic Q&A chatbots with businesses and provide a variety of features that is not even possible with live agents. It basically satisfies all the criteria and requirements since it has a flexible API layer, highly secure and scalable since it is a Saas(Software as a Service) solution, uses natural language processing that is capable of handling structured and unstructured data and is intelligent enough to alter flow routes when required. The Hackbot has a simple UI and is configurable and can make action calls to flows that allow future growth. It also can make Q&A topics with a single paste of the URL and thus is the perfect bot needed today.

## References and Links

Hackbot Working and Demo video: - attached in zip file with file name (Hackbot\_demo)

Chat with Hackbot Link: - [Link](#)

Youtube Demo Link: - [Link](#)

Presentation: - [presentation link](#)

Github Repo Link: - [Github repo link for API](#)

Heroku Hosted API Link: - <https://exl-hackbot.herokuapp.com/orders/>

Excel File (Database Prototype Link): - [Excel link](#)

Resources :-

- [Power Virtual Agent](#)
- [Power Automate](#)
- [KFC Menu page](#)
- [McDonald's FAQ page](#)