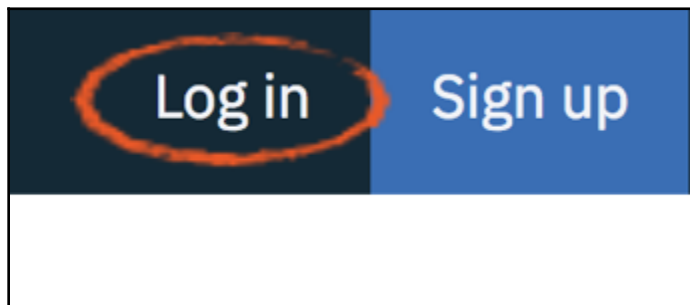
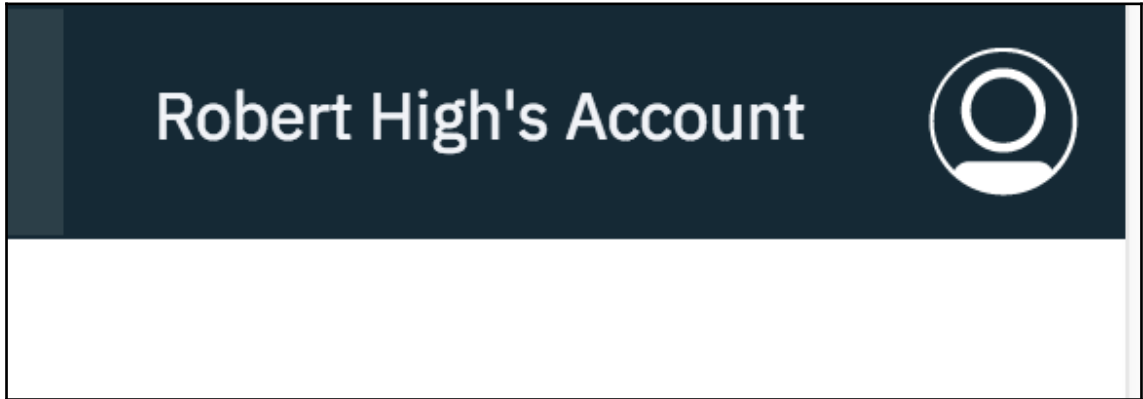
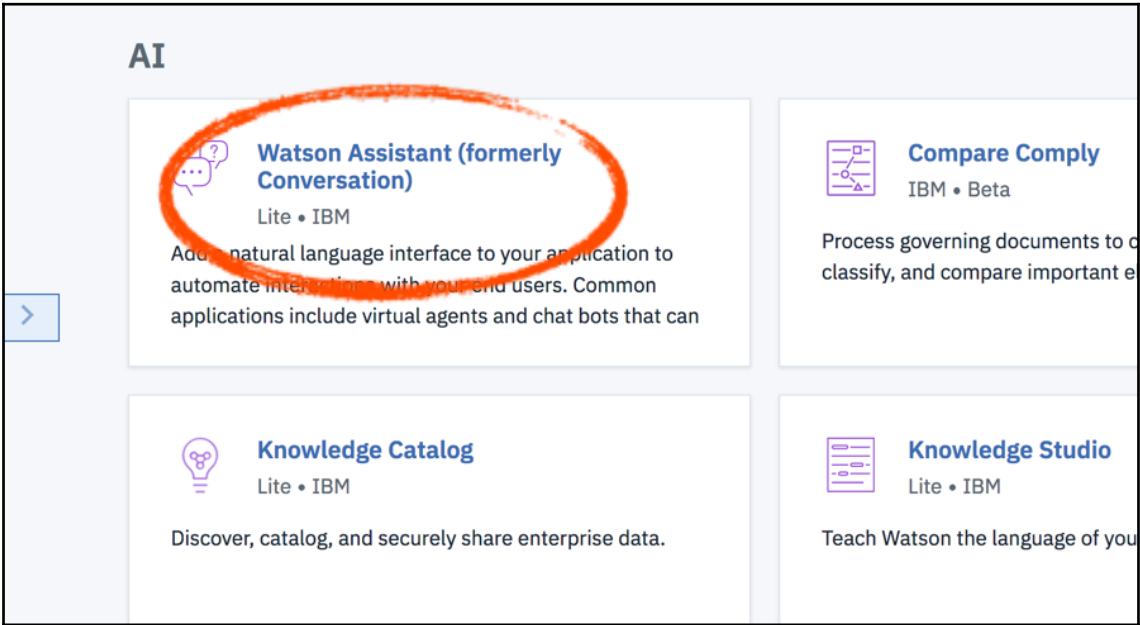
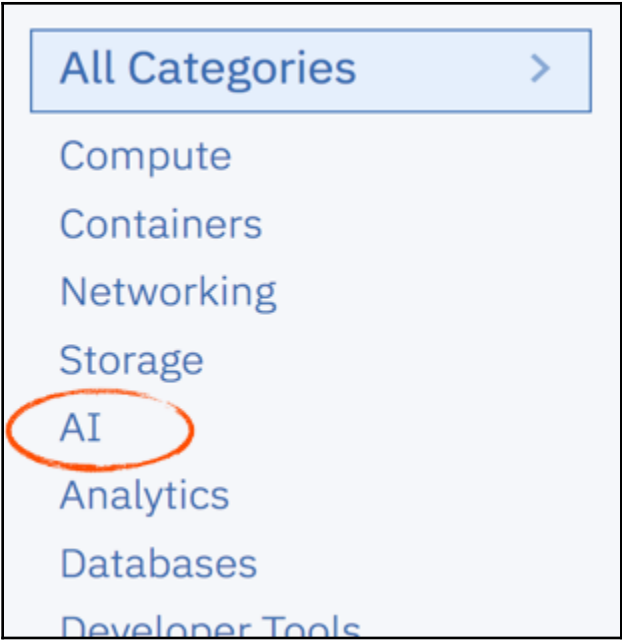


Table of Contents

	1
Index	95

Chapter 2: Can Machines Converse Like Humans?





Pricing Plans

Monthly prices shown are for country or region: [United States](#)

PLAN	FEATURES	PRICING
<input checked="" type="checkbox"/>	Lite 10,000 API Calls per Month* Up to 5 Workspaces Up to 100 Intents Up to 25 Entities *POST /message method calls only	Free
	<p>The Lite plan gets you started with 10,000 API calls per month at no cost. And when you upgrade to a paid plan, you'll keep all your intents, entities, dialog flows, and chat logs.</p> <p>Lite plan services are deleted after 30 days of inactivity.</p>	
Standard	Unlimited API queries per month Up to 20 Workspaces Up to 2000 Intents Up to 1000 Entities Shared Public Cloud *POST /message method calls only	\$0.0025 USD/API call*
Premium	Premium Plans offer developers and organizations a single tenant instance of one or more Watson services for better isolation and security. These plans offer compute-level isolation on the existing shared platform, as well as end-to-end encrypted data while in transit and at rest. For more information, or to purchase a premium plan, visit: https://ibm.biz/contact-wdc-premium	

Cost

Create

Watson Services / Assistant /



Watson Assistant (formerly Conversation)-gl

Location: US South

Org: highr@us.ibm.com

Space: dev

Get started by launching the tool.

[Launch tool](#)

[Getting started tutorial](#)

[API reference](#)

IBM Watson Assistant

Home

Workspaces

IBM Watson Assistant

Home

Workspaces

Workspaces

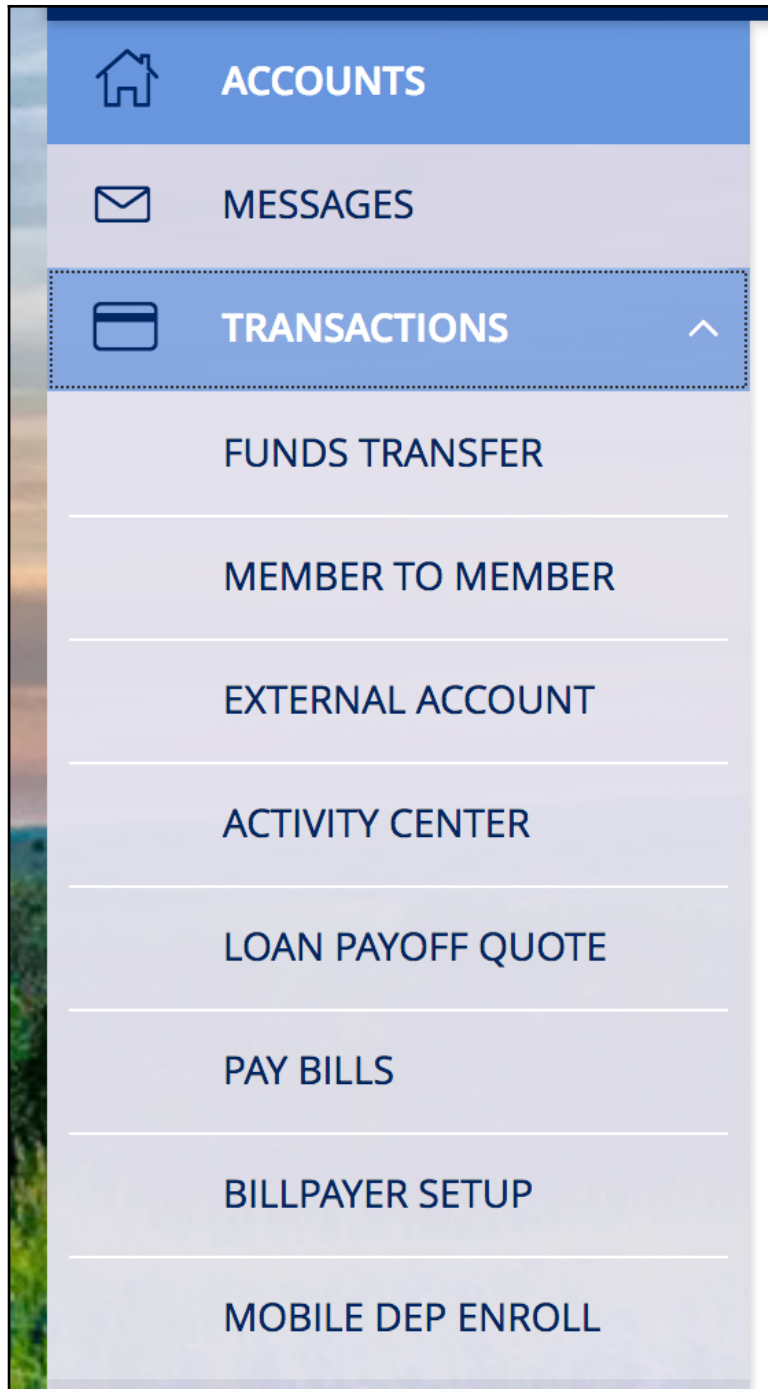
Create a new workspace

Workspaces enable you to maintain separate intents, user examples, entities, and dialogs for each use or application.

You are using 0 of 5 available workspaces in this instance.

Create





×

Create a workspace

Workspaces enable you to maintain separate intents, user examples, entities, and dialogs for each use or application.

Name
Banking Application|

Description

Language
English (U.S.) ▼

Create



No intents yet.

An intent is the goal or purpose of the user's input. Adding examples to intents helps your virtual assistant understand different ways in which people would say them.

Browse available intents to get started using the Content Catalog

Add intent

Browse content catalog

Import intents

Intent name

#Accounts|

Description

Add a description to this intent

Create intent

No examples yet.





Train your virtual assistant with this intent by adding unique examples of what your users would say.


Add a description to this intent


Add user examples


What is my account balance?

Add example

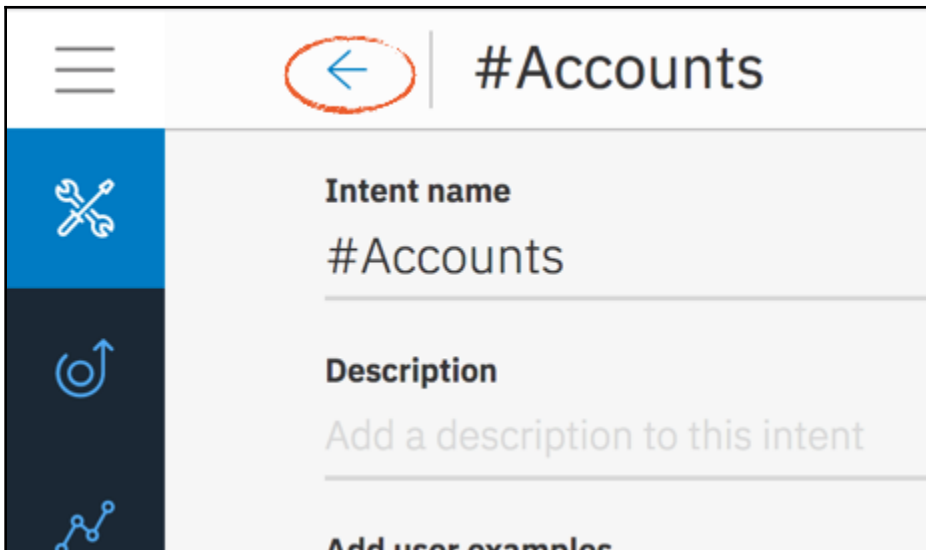
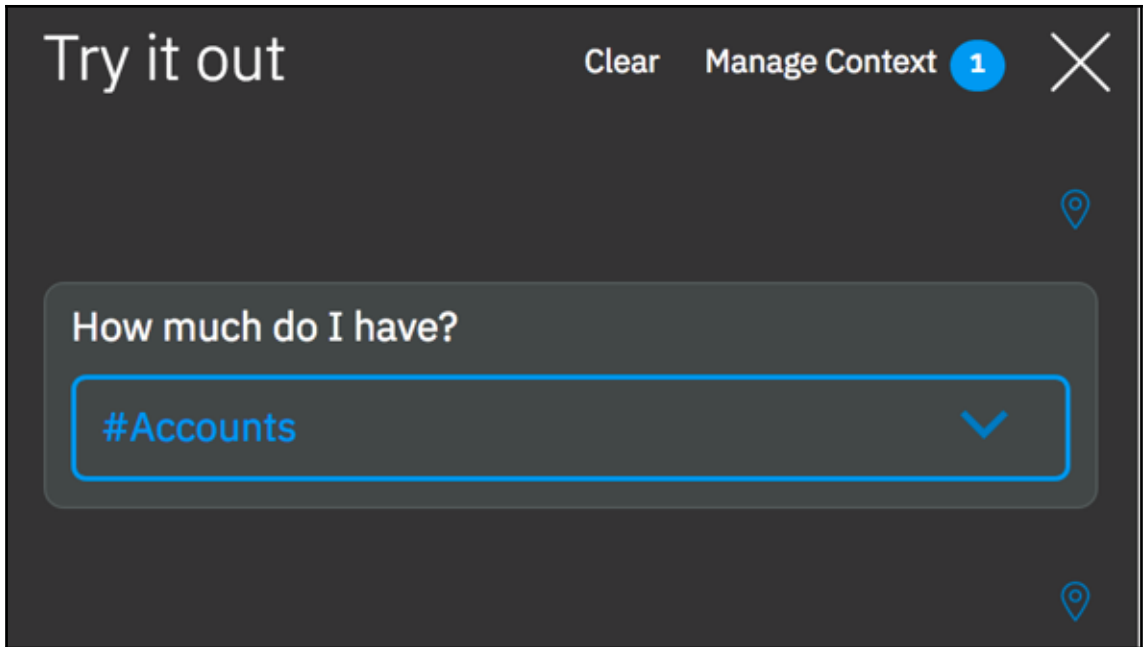
Last modified a few seconds ago    

Try it out Clear Manage Context **1** 

Watson is training 



Enter something to test your virtual assistant



The screenshot displays the IBM Watson Assistant interface. At the top, there is a hamburger menu icon and the text "IBM Watson Assistant". Below this, a breadcrumb path reads "Workspaces / Banking Application / Build". A navigation bar contains four tabs: "Intents" (which is selected and underlined), "Entities", "Dialog", and "Content Catalog". On the left side, there is a vertical sidebar with four icons: a wrench and screwdriver, a target with an arrow, a network diagram, and a grid. The main content area features a blue "Add intent" button, followed by three icons: an upward arrow, a downward arrow, and a trash can. Below these are two rows of intent entries, each starting with a checkbox. The first row shows "Intent (1)" with a dropdown arrow and a "Descripti" label on the right. The second row shows "#Accounts".

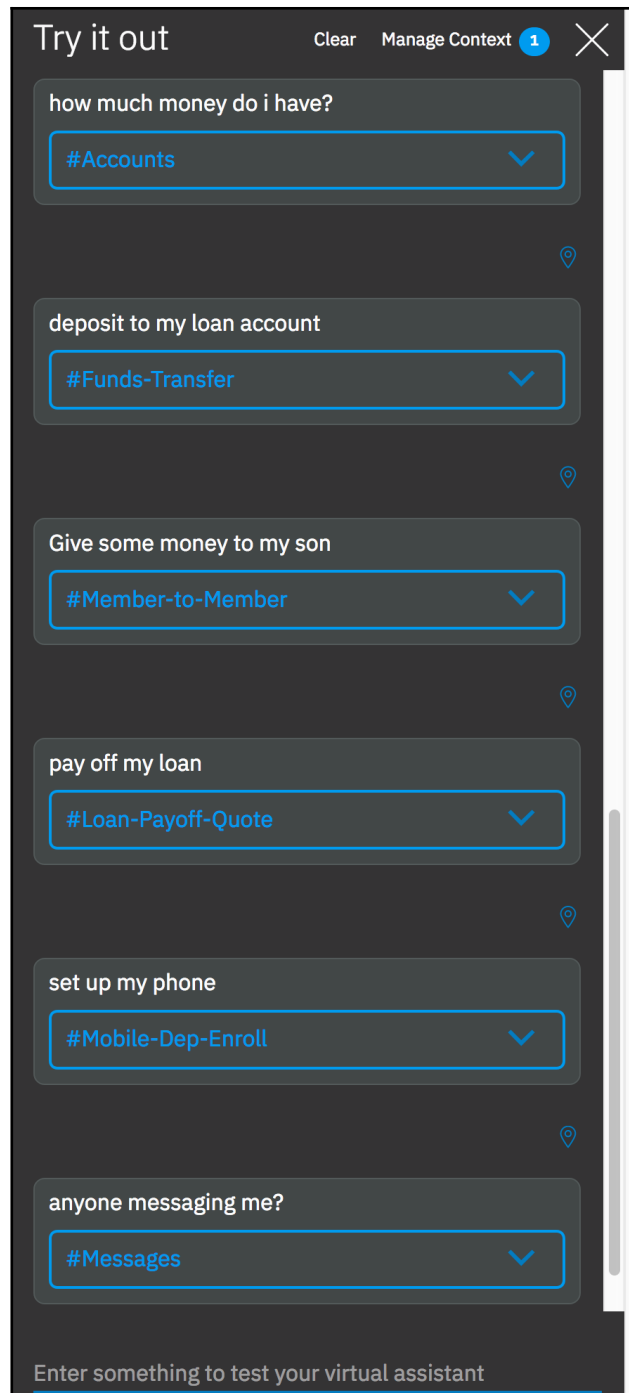
IBM Watson Assistant

[Workspaces](#) / Banking Application / Build

Intents Entities Dialog Content Catalog

Add intent ↑ ↓ 🗑️

<input type="checkbox"/>	Intent (1) ▼	Descripti
<input type="checkbox"/>	#Accounts	



what do i have left?

#Accounts



what do I have left?

Enter intent name...



#Funds-Transfer

#Loan-Payoff-Quote

#Member-to-Member

#Messages

Mark as irrelevant ⓘ

How much do I have left?

#Loan-Payoff-Quote



What is left on that loan account?

#Loan-Payoff-Quote



Intent name

#Pay-Bills

Description


Add a description to this intent


Add user examples


Add user examples to this intent


Add example


User examples (5) ▼

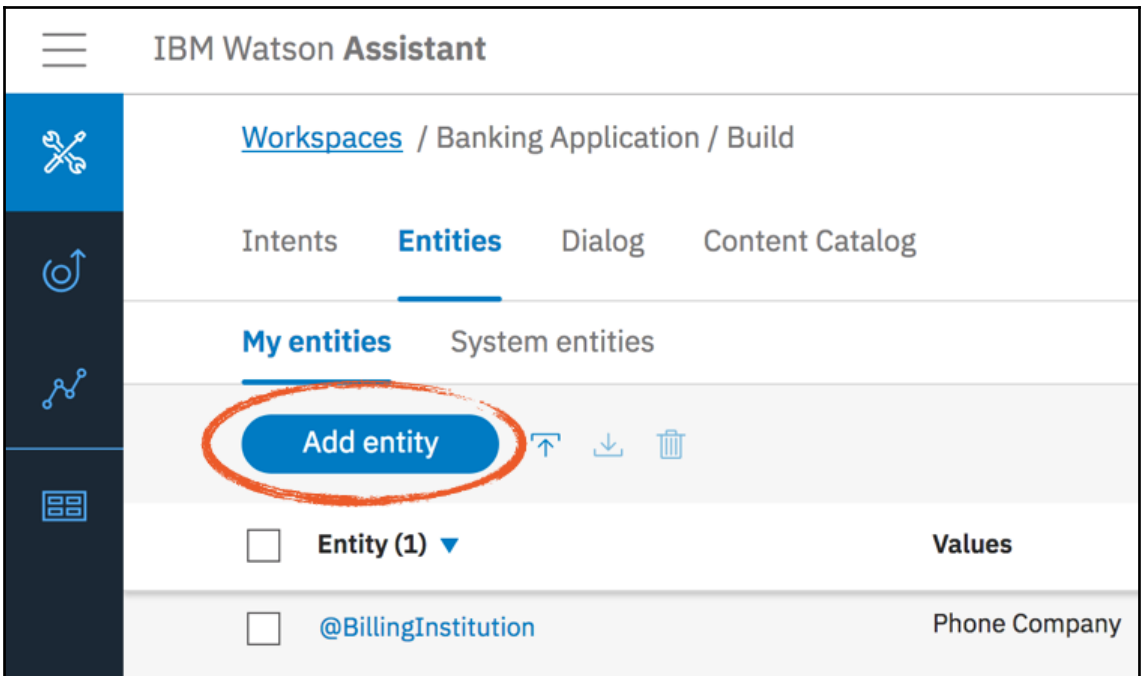
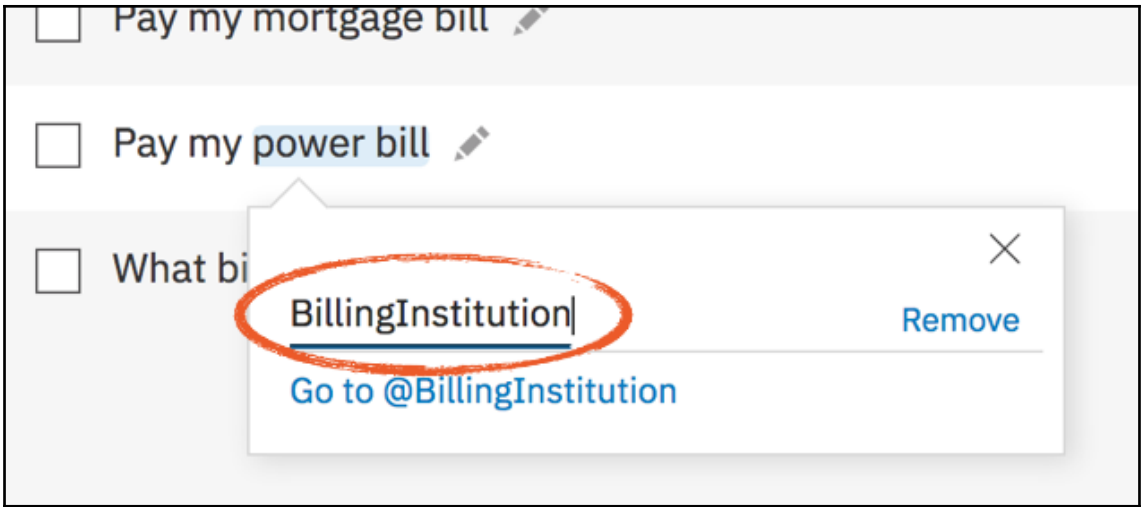
Let's pay bills 

Pay my latest bills 

Pay my mortgage bill 

Pay my power bill 

What bills are due? 



Entity name Fuzzy Matching On

@PersonalRelations

Value name Synonyms

Myself Synonyms ▼ me - I - Add synonym... +

Add value Show recommendations

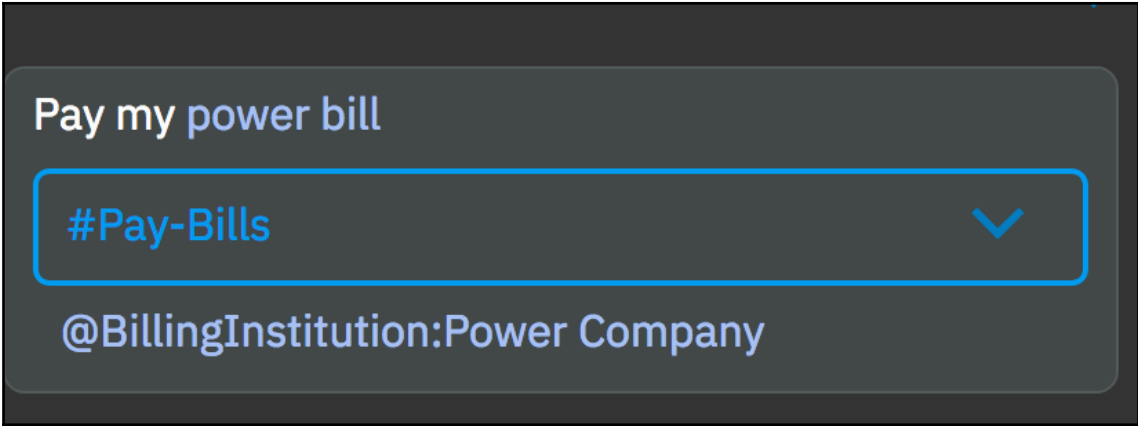
[Workspaces](#) / Banking Application / Build

Intents **Entities** Dialog Content Catalog

My entities System entities

Add entity

	Entity (5) ▼	Values
<input type="checkbox"/>	@Accounts	credit card, savings, loan, checking
<input type="checkbox"/>	@BillingInstitution	Phone Company, Power Company
<input type="checkbox"/>	@FromAccount	credit card, checking, savings, loan
<input type="checkbox"/>	@PersonalRelations	Mother, Myself, Father, Daughter, Son, Husband, Wife
<input type="checkbox"/>	@ToAccount	savings, loan, credit card, checking



Workspaces / Banking Application / Build

Intents **Entities** Dialog Content Catalog

My entities **System entities**

These are common entities created by IBM that could be used across any use case. They are ready to use as soon as you add them. *System entities cannot be edited. [Learn more](#)

Name (7) ▼	Description	Status
> @sys-currency	Extracts currency values from user examples including the amount and the unit. (20 cents)	<input checked="" type="checkbox"/> On
> @sys-date	Extracts date mentions (Friday)	<input checked="" type="checkbox"/> On
> @sys-location <small>BETA</small>	The @sys-location system entity extracts place names (country, state/province, city, town, etc.) from the user's input. (Boston)	<input type="checkbox"/> Off
> @sys-number	Extracts numbers mentioned from user examples as digits or written as numbers. (21)	<input checked="" type="checkbox"/> On
> @sys-percentage	Extracts amounts from user examples including the number and the % sign. (15%)	<input type="checkbox"/> Off
> @sys-person <small>BETA</small>	The @sys-person system entity extracts names from the user's input. (Anna)	<input type="checkbox"/> Off
> @sys-time	Extracts time mentions (at 10)	<input type="checkbox"/> Off

[←](#) | #Funds-Transfer

#Funds-Transfer

Description
Add a description to this intent

Add user examples
Add user examples to this intent

[Add example](#)

User examples (15) ▾

Can you transfer bewteen my credit card and savings ✎

Deposit \$200 to checking ✎

Deposit to another account ✎

give me some dough ✎

I want to move some money ✎

Move money between accounts ✎

Move money from checking to savings ✎

Move to my Checking account ✎

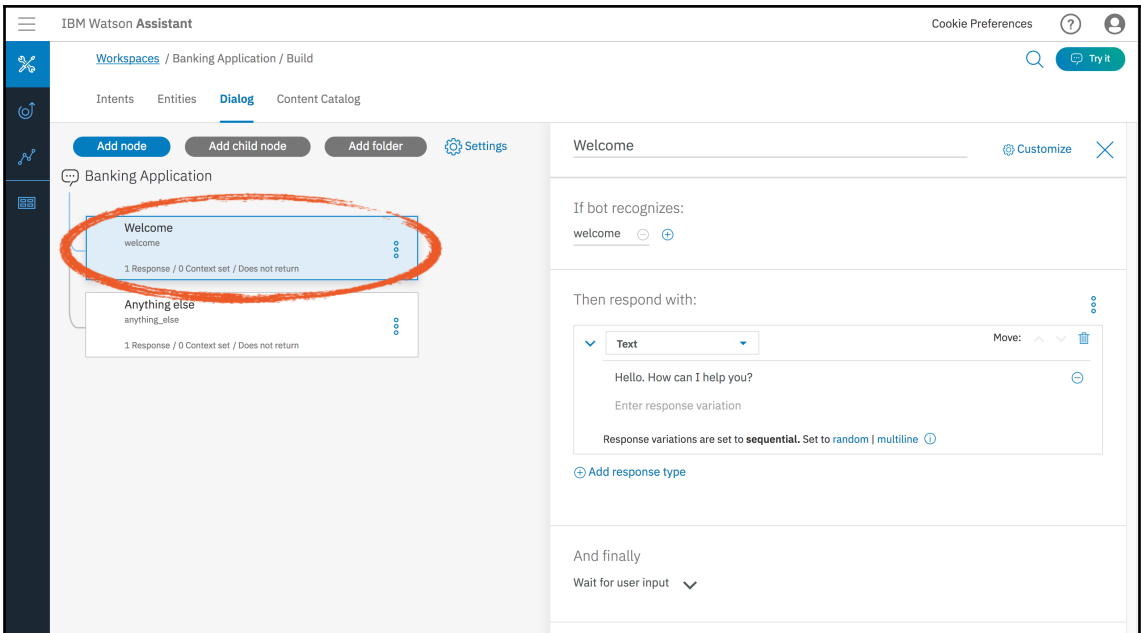
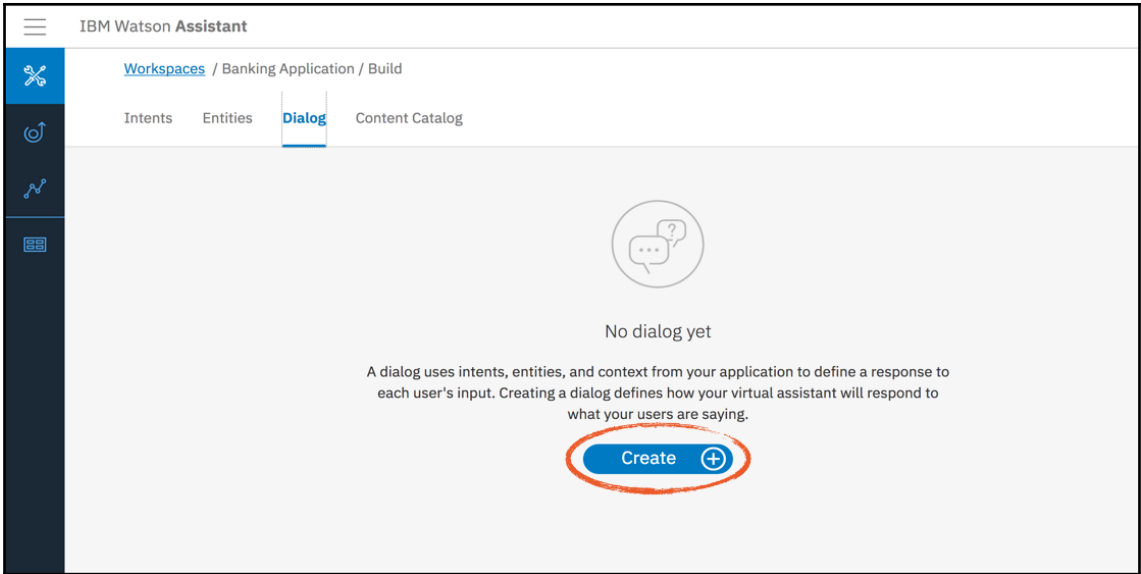
Put \$200 into my savings, from my loan account ✎

Take \$100 from savings and put into checking ✎

Transfer funds ✎

Transfer money ✎

Transfer money from savings ✎



IBM Watson Assistant

Workspaces / Banking Application / Build

Intents Entities **Dialog** Content Catalog

Add node Add child node Add folder Settings

Banking Application

- Welcome
welcome
1 Response / 0 Context set / Does not return
- #Pay-Bills and @BillingInstitution:(Pho...**
1 Response / 0 Context set / Does not return
- Anything else
anything_else
1 Response / 0 Context set / Does not return

If bot recognizes:

#Pay-Bills and @BillingInstitution:(Phone Company)

Then respond with:

Text
Thank-you, we will pay your phone bill.
Enter response variation
Response variations are set to sequential. Set to random | multiline

And finally
Wait for user input

Try it out

Clear

Manage Context

1



Welcome to ABC bank. What can I do for you?



Pay my power bill

#Pay-Bills



@BillingInstitution:Power Company

Thank-you, we will pay your Power Bill.



Transfer money to my mother's savings account.

#Member-to-Member

@PersonalRelations:Mother

@Accounts:Savings

IBM Watson Assistant

Workspaces / Banking Application / Build

Intents Entities **Dialog** Content Catalog

Add node Add child node Add folder Settings

Banking Application

Name this node... Customize

If bot recognizes:

#Funds-Transfer

Then respond with:

Text Move: [up] [down] [trash]

Customize "Untitled node"

Customize node

Digressions

Slots (i)

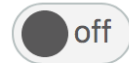


Enable this to gather the information your virtual assistant needs to respond to a user within a single node.

Prompt for everything

Enable this to ask for multiple pieces of information in a single prompt, so your user can provide them all at once and not be prompted for them one at a time.

Multiple responses (i)



Enable multiple responses so that your virtual assistant can provide different responses to the same input, based on other conditions.

Cancel

Apply

Name this node... Customize ✕

If bot recognizes:
#Funds-Transfer ⊖ ⊕

Then check for: 0 Manage handlers

	Check for	Save it as	If not present, ask	Type
1	@Accounts	\$FromAccount	What account do yo	Required ⚙️ 🗑️

⊕ Add slot

Try it out

Clear

Manage Context

1



Welcome to ABC bank. What can I do for you?



transfer funds

#Funds-Transfer



What account do you want to debit?



Try it out

Clear

Manage Context

2



Welcome to ABC bank. What can I do for you?



transfer funds

#Funds-Transfer



What account do you want to debit?



savings

#Funds-Transfer



@Accounts:savings



Context variables ⓘ ×

\$Enter variable name

\$FromAccount ⊖

\$timezone ⊖

Name this node... ⚙️ Customize ✕

If bot recognizes:

#Funds-Transfer ⊖ ⊕

Then check for: 📌 Manage handlers

	Check for	Save it as	If not present, ask	Type		
1	<u>@Accounts</u>	<u>\$FromAccount</u>	<u>What account do yo</u>	Required	⚙️	🗑️
2	<u>@Accounts</u>	<u>\$ToAccount</u>	<u>Where do you want</u>	Required	⚙️	🗑️
3	<u>@sys-currency</u>	<u>\$Amount</u>	<u>How much do you w</u>	Required	⚙️	🗑️

⬆️ ⊕ Add slot

Then respond with: ⋮

Then respond with:

Text Move: ^ v 🗑️

Thank-you. We will transfer \$\$Amount from \$FromAccount to \$ToAccount. ⊖

Enter response variation

Response variations are set to **sequential**. Set to [random](#) | [multiline](#) ⓘ

[+ Add response type](#)

Try it out

Clear

Manage Context

4



Welcome to ABC bank. What can I do for you?



move \$300

#Funds-Transfer



@sys-currency:300

@sys-number:300

What account do you want to debit?



Move it from checking to savings

#Funds-Transfer



@Accounts:checking

@Accounts:savings

Thank-you. We will transfer \$300 from checking to savings.



Transfer \$300 to savings from checking.

#Funds-Transfer



@sys-currency:300

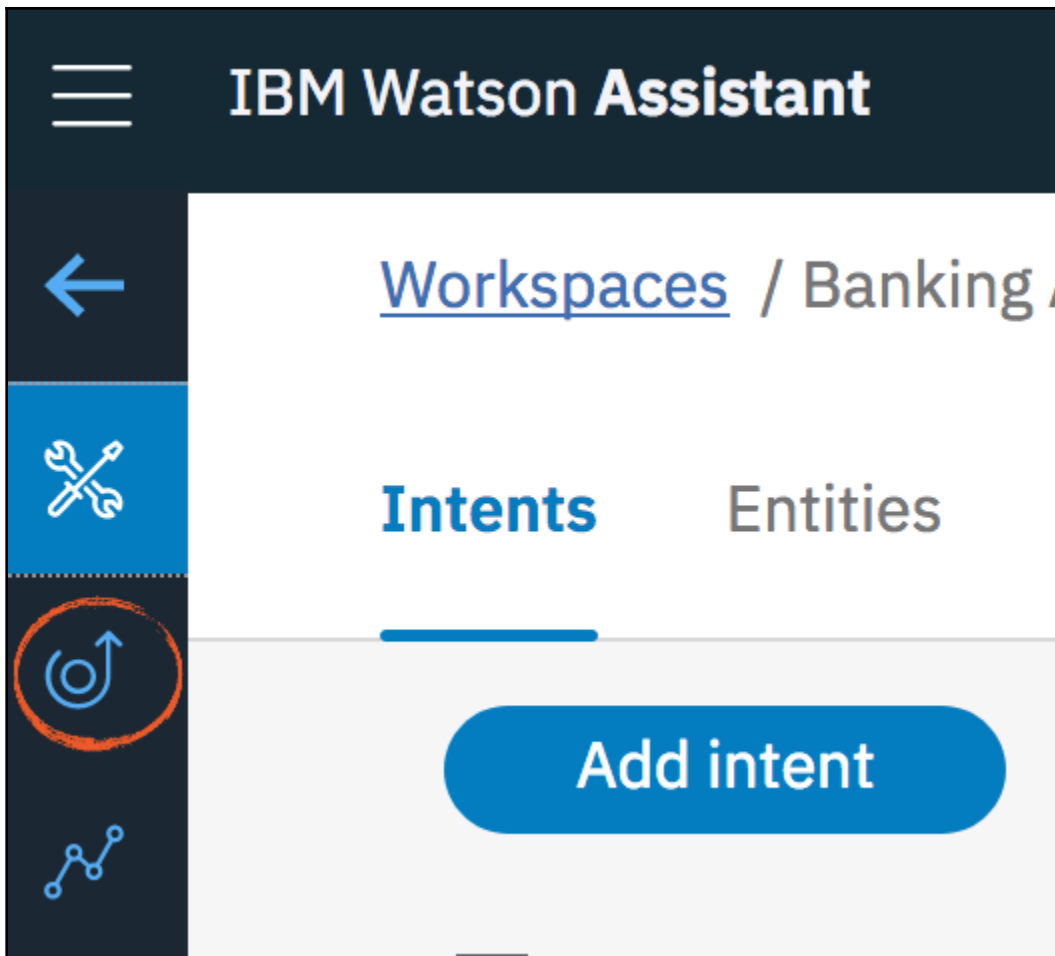
@sys-number:300

@Accounts:savings

@Accounts:checking

Thank-you. We will transfer \$300 from savings to checking.





IBM Watson Assistant

Workspaces / Banking Application / Deploy

Deploy Options **Credentials**

Deploy with Cloud Functions ⓘ

Service Credentials

Service name
Watson Assistant (formerly Conversation)-gl

Credential name	Username	Password
Auto-generated service credentials	4eee39bf-2453-436c-85ea-7af965ad73b2	YkP5KDTRjffH

Workspace Details

Workspace name	Workspace ID	Workspace URL
Banking Application	3e86c7a1-b071-4e6a-ada2-a8ac616e6aa6	https://gateway.watsonplatform.net/assistant/api/v1/workspaces/3e86c7a1-b071-4e6a-ada2-a8ac616e6aa6/message/

Workspaces / Banking Application / Build 🔍 Try it

Intents Entities **Dialog** Content Catalog

[Add node](#) [Add child node](#) [Add folder](#) [Settings](#)

Banking Application

- Welcome**
welcome
1 Response / 0 Context set / Does not return
- #General_Greetings
1 Response / 0 Context set / Does not return
- #General_Ending
1 Response / 0 Context set / Does not return
- > #Pay-Bills
0 Responses / 1 Context set / Skip user input
- > #Funds-Transfer
1 Response / 3 Context set / Skip user input
- Continue

Welcome ⚙️ Customize ✕

If bot recognizes:
welcome ⌵ ⌶

Then respond with:

Text Move: ⌵ ⌶ ⌵

Welcome to ABC bank. What can I do for you? ⌵

Enter response variation

Response variations are set to **sequential**. Set to **random** | **multiline** ⓘ

[Add response type](#)

And finally
Wait for user input ⌵

```

1 import json
2 import ibm_watson
3
4 def BankBot():
5
6     # Create session with the Watson Assistant
7     assistant = ibm_watson.AssistantV1(
8         iam_apikey='PrLJLVykZG4V-FQrADLiZG91oOKcJN0UZWEUAo0Hxw8Q',
9         version='2018-09-20')
10
11     # Pull the first prompt from the Dialog
12     response = assistant.message(
13         workspace_id='3e86c7a1-b071-4e6a-ada2-a8ac616e6aa6').get_result()
14
15     # Continue prompting the user and getting their input, until they indicate
16     # it's time to quit
17     while True:
18
19         # Get the text of the prompt
20         prompt = response.get('output').get('text')
21
22         # Display all of the text provided in the prompt
23         for text in prompt:
24             print(text)
25
26         # Get the user's next utterance
27         utterance = input("==> ")
28
29         # Invoke Watson to assess the intent of the utterance and determine how
30         # to respond to the user
31         response = assistant.message(
32             workspace_id='3e86c7a1-b071-4e6a-ada2-a8ac616e6aa6',
33             input={'text': utterance},
34             context=response.get('context')
35             ).get_result()
36
37         # Ensure there are intents in the response.
38         if len(response.get("intents")) > 0:
39
40             #Check whether the dialog indicates an end to the conversation
41             if response["intents"][0]["intent"] == "General_Ending":
42                 if len(response.get("output").get("text")) > 0:
43                     # If there are any remaining messages in the response then
44                     # print them out.
45                     print(response.get("output").get("text")[0] + '\n')
46                     # And terminate the conversation.
47                     break
48
49             # If there are other intents that need processing, that logic can
50             # go here
51
52
53 BankBot()
54

```

Welcome to ABC bank. What can I do for you?
 ==> i want to transfer some money from my checking account
 How much do you want to transfer?
 ==> \$250
 Where do you want to deposit?
 ==> put it in savings
 Thank-you. We will transfer \$250 from checking to savings.

What else can I help you with?
 ==> I want to pay off my credit card
 Thank-you, we will pay your credit card.

Is there anything else you need?
 ==> no, that will do, thanks
 Thank-you for letting us help you.

< Assistants

Martha the Banker

Skills

A skill is building block of your assistant. A dialog skill is created by authoring intents, entities, and nodes. A search skill helps your dialog skill by providing answers from linked documents or web pages. [Learn more](#)

Banking Application ⋮

LANGUAGE:	TRAINED DATA:	VERSION:	CREATED:	UPDATED:
English (US)	15 Intents 6 Entities 24 Dialog.Nodes	Development	May 4 2019, 10:10 -04:00	May 4 2019, 10:10 -04:00

Integrations

Choose a channel to deploy your Assistant.

Add integration

Chapter 3: Computer Vision

Custom

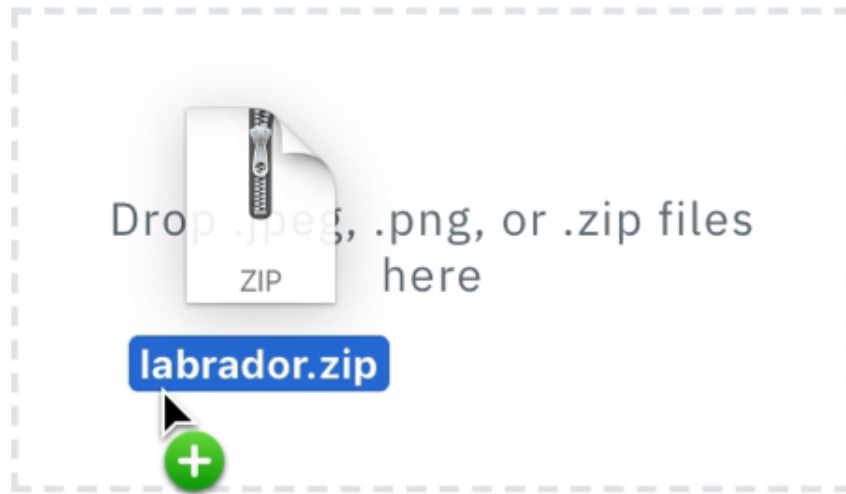
Create custom, unique visual classifiers. Use the service to recognize custom visual concepts that are not available with general model.

[Create Model !\[\]\(8c9a8da65a07f17b7308a01207573f8a_img.jpg\)](#)

Default Custom Model 



1. Upload to project



IBM Watson Studio

https://dataplatforn...

1617547 - Tanmay Bak... TB

Projects / exp / Dog Breed Classifier / Edit and retrain

Dog Breed Classifier

Associated Service : Visual Recognition


My classes (4) All images (251)

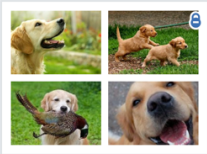
Drag and drop files from your project.

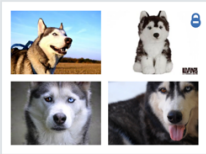
4 classes | 0 incomplete classes | 0 unclassified images


New training data size: 7.8/250 MB

Search classes

 Create a class

 golden_retriever (...)

 husky (94)

 labrador (46)

IBM Watson Studio

Projects / exp / Dog Breed Classifier

Dog Breed Classifier

Associated Service : Visual Recognition

[Edit and Retrain](#)

Overview **Test** Implementation

Filter


Threshold 0.01

0 1

Class

- golden_retriever
- husky
- labrador

new_husky.jpg



husky	0.91
golden_retriever	0.00
labrador	0.00

IBM Watson Studio

Projects / exp / Dog Breed Classifier

Dog Breed Classifier

Associated Service : Visual Recognition

[Edit and Retrain](#)

Overview Test Implementation

Summary

Search Summary

Model ID	DogBreedClassifier_452959111
Status	Ready
Explanation	This model is ready for use.
Created on	12/12/2018, 5:20:54 AM
Updated on	12/12/2018, 5:20:54 AM
Number of classes	3
Number of images	238

Classes

Search Classes

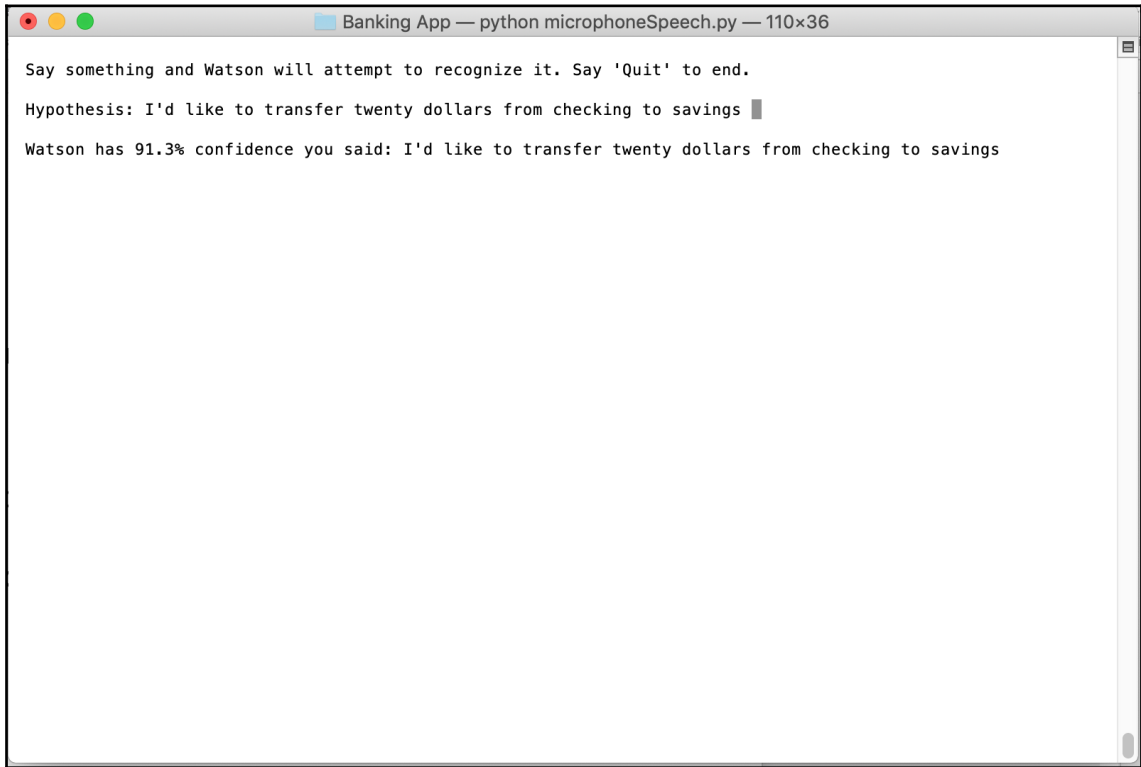
CLASS	NUMBER OF EXAMPLES
golden_retriever	98







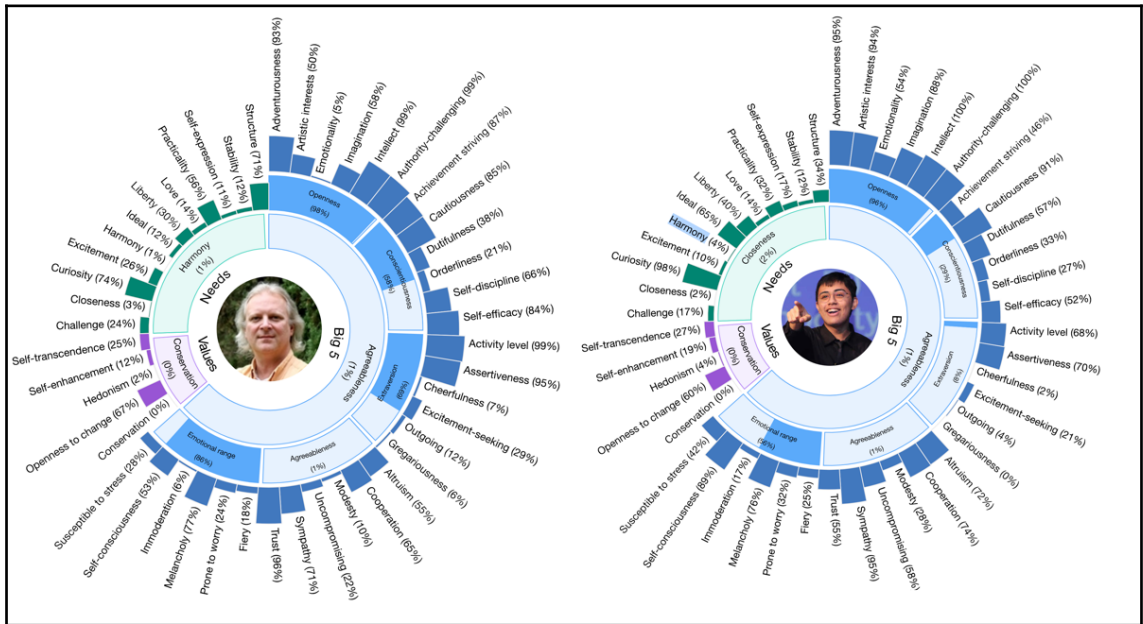
Chapter 4: This Is How Computers Speak



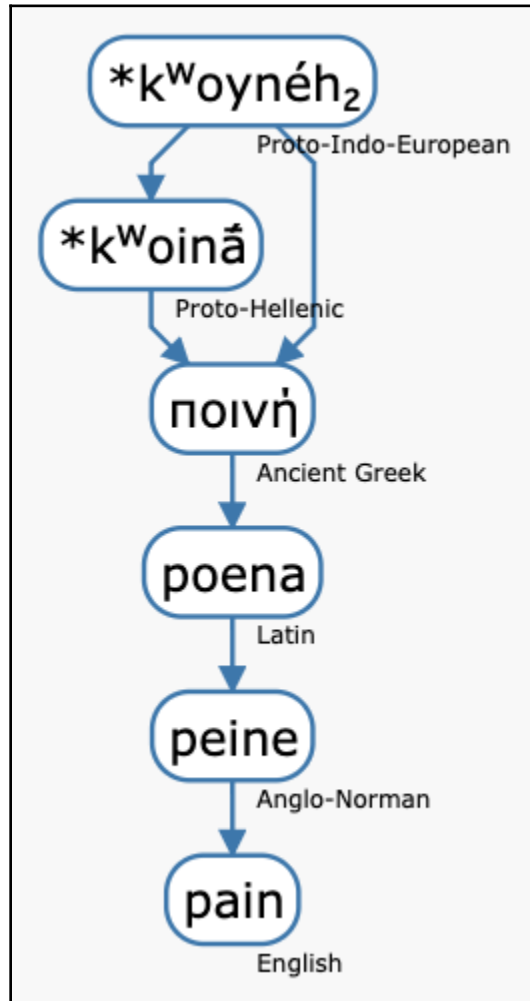
The image shows a terminal window titled "Banking App — python microphoneSpeech.py — 110x36". The terminal contains the following text:

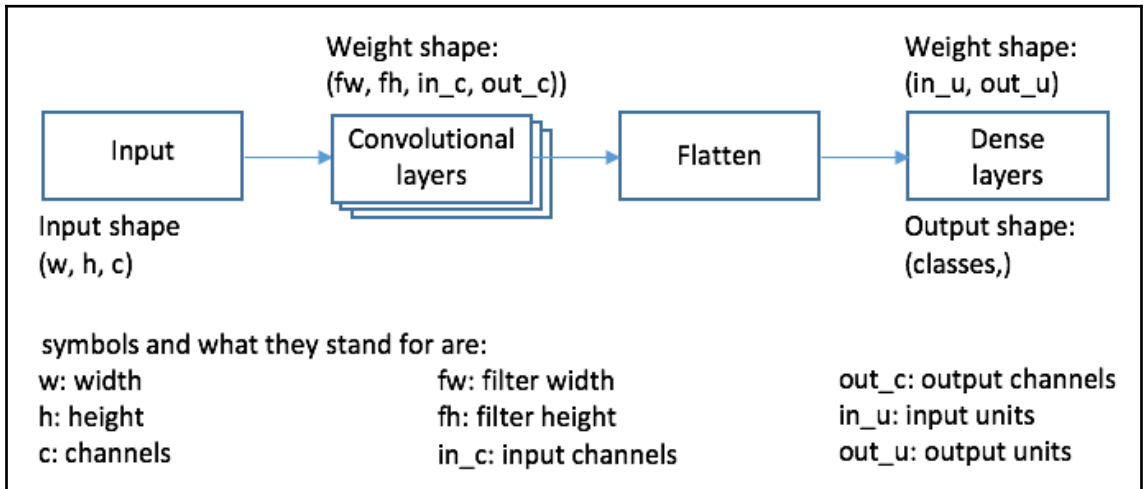
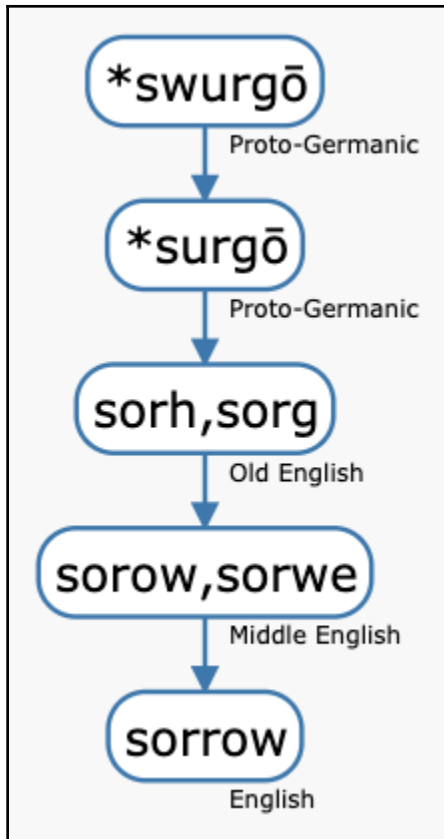
```
Say something and Watson will attempt to recognize it. Say 'Quit' to end.  
Hypothesis: I'd like to transfer twenty dollars from checking to savings █  
Watson has 91.3% confidence you said: I'd like to transfer twenty dollars from checking to savings
```

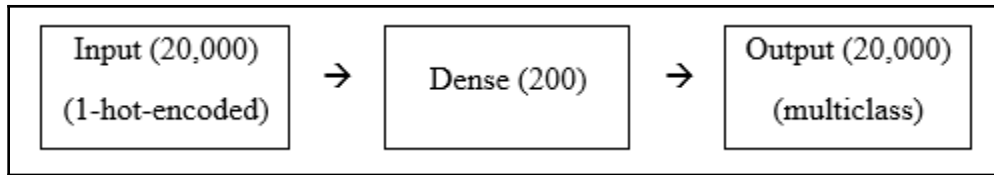
Chapter 5: Expecting Empathy from Dumb Computers

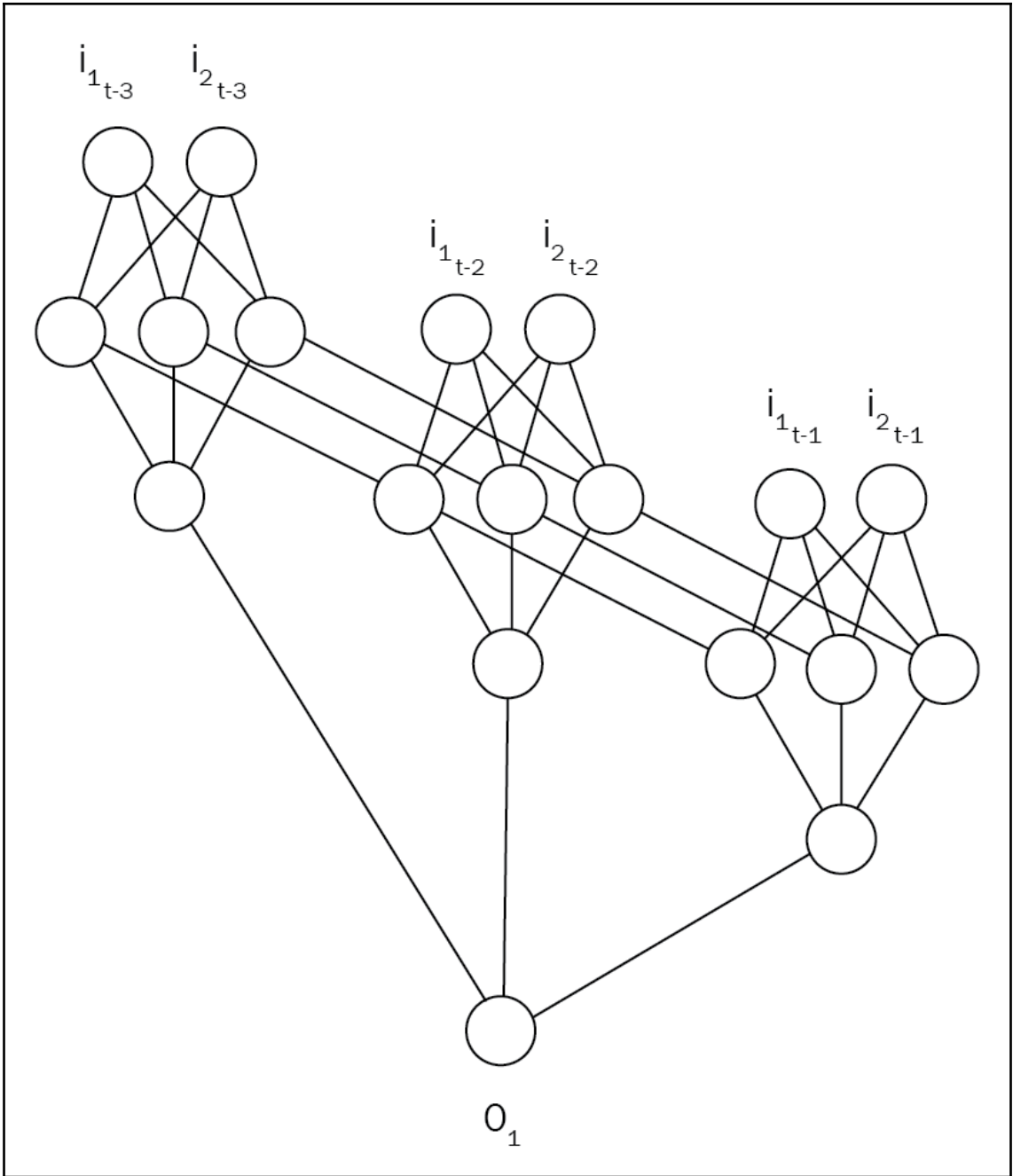


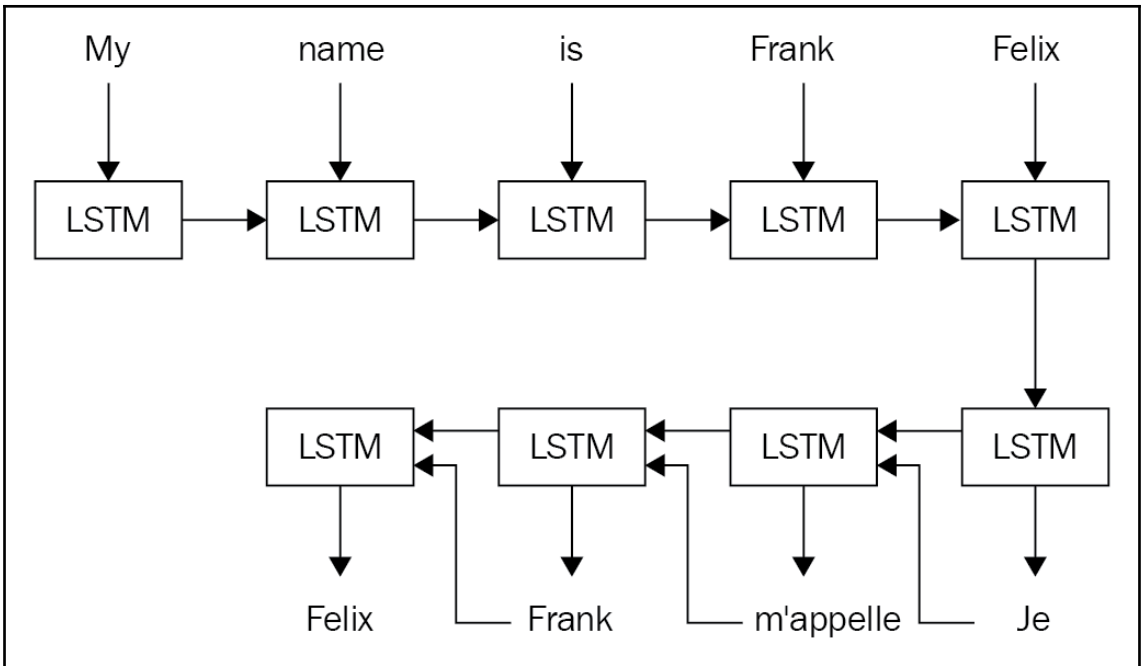
Chapter 6: Language - How Watson Deals with NL











IBM Watson Studio

1323471 - IBM

Services / Watson Services / Natural Language Classifier - Airli...

Natural Language Classifier : Natural Language Classifier - Airline Sentiment

Associated project : none

Overview Credentials

Create new

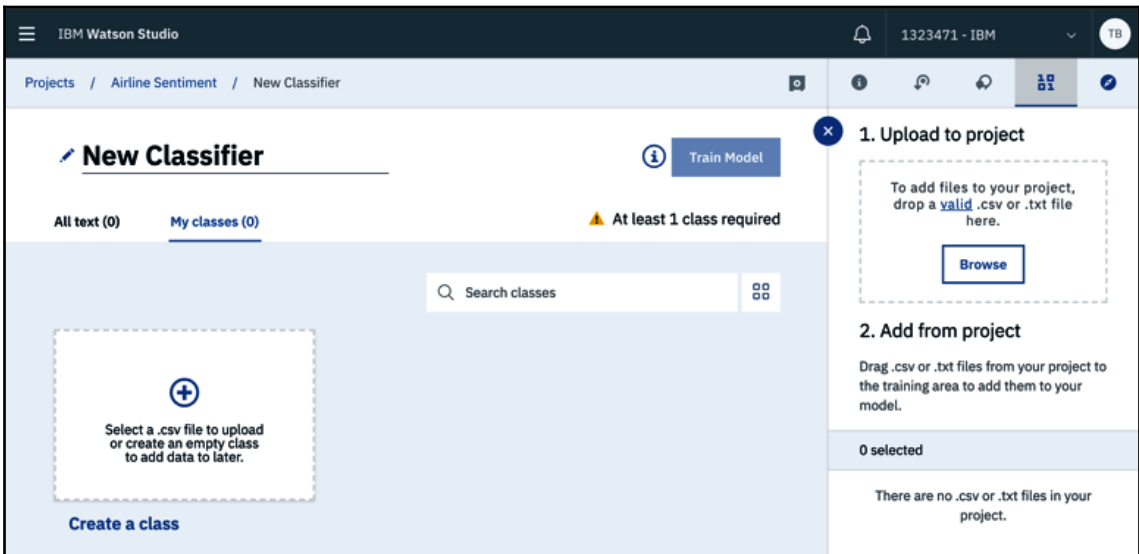
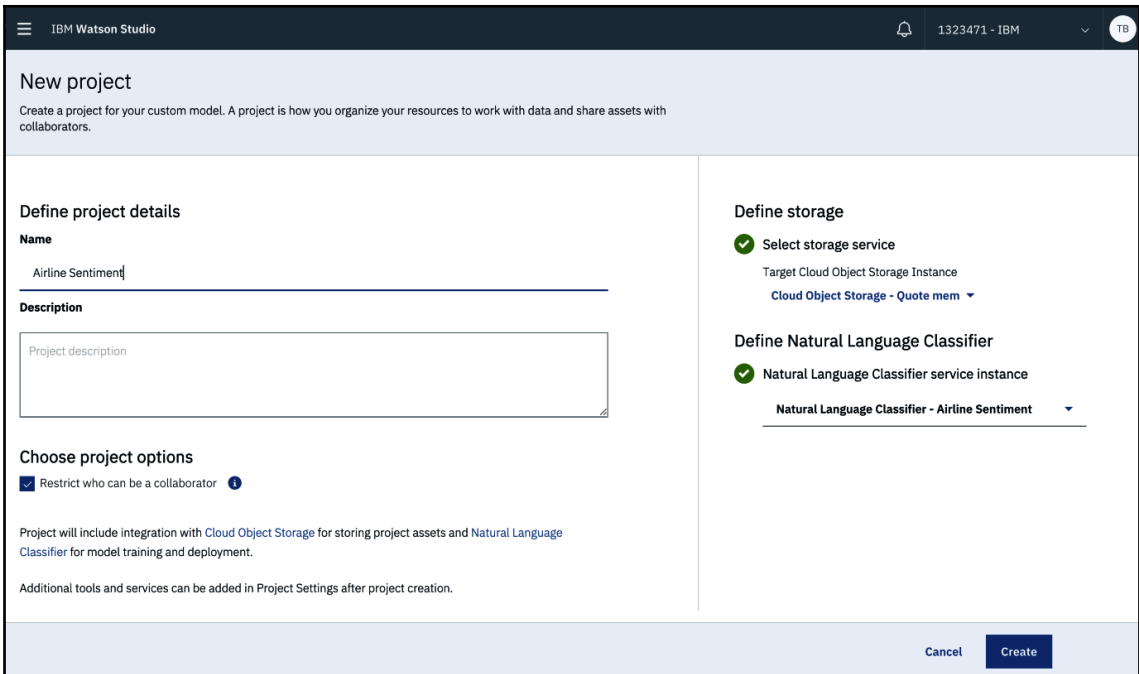
Create custom, unique classifiers using your own text examples and classes.

[Create Model](#)

Resources

Everything you need to start building with Watson.

- [Getting started with Watson](#)
- [Download SDKs](#)
- [See all documentation](#)
- [Videos](#)





New Classifier

IBM Watson Studio

1323471 - IBM

Projects / Airline Sentiment / Airline Tweet Sentiment

Airline Tweet Sentiment

Train Model

All text (0) My classes (0) ⚠ At least 1 class required

Search classes

Select a .csv file to upload or create an empty class to add data to later.

Create a class

1. Upload to project

To add files to your project, drop a **valid** .csv or .txt file here.

Browse

2. Add from project

Drag .csv or .txt files from your project to the training area to add them to your model.

0 selected

<input type="checkbox"/>	tweet_sentiment.csv	
	4 Apr 2019, 10:02:27 pm	
	1.67 MB	

IBM Watson Studio 1323471 - IBM TB

Services / Watson Services / Natural Language Classifier - Airli...

Natural Language Classifier : Natural Language Classifier - Airline Sentiment

Associated project : Airline Sentiment

Overview Credentials

Create new

Create custom, unique classifiers using your own text examples and classes.

[Create Model](#)

Airline Tweet Sentim...

[Copy classifier ID](#)

Date created: 4/4/2019
Language: English

[Test](#)

Resources

Everything you need to start building with Watson.

- [Getting started with Watson](#)
- [Download SDKs](#)
- [See all documentation](#)
- [Videos](#)

IBM Watson Studio 1323471 - IBM

Projects / Airline Sentiment / Airline Tweet Sentiment

Airline Tweet Sentiment

Associated Service : Natural Language Classifier - Airline Sentiment [Edit and Retrain](#)

[Overview](#) [Test](#) [Implementation](#)

Summary

Search Summary

Model ID	8a423bx518-nlc-1830
Status	Available
Explanation	The classifier instance is now available and is ready to take classifier requests.
Created on	4/4/2019, 10:04:10 PM
Language	English
Number of classes	3
Number of text examples	14266

Classes

[Download training data](#) Search Classes

CLASS	NUMBER OF EXAMPLES
negative	8997
neutral	3020
positive	2274

IBM Watson Studio 1323471 - IBM

Projects / Airline Sentiment / Airline Tweet Sentiment

Airline Tweet Sentiment

Associated Service : Natural Language Classifier - Airline Sentiment [Edit and Retrain](#)

[Overview](#) [Test](#) [Implementation](#)

Filter

Threshold: 0.0

Class

Enter a phrase to classify [Classify](#)

Drop .csv or .txt files here to let the classifier analyze them or browse to select files.

Enter a phrase to classify

Classify

× Clear results

Download results

#worstairline



negative 0.98

neutral 0.02

positive 0.01

Airline provides the best service of any airline, and has wide seats in economy!



negative 0.16

neutral 0.02

positive 0.81

Chapter 7: Structuring Unstructured Content Through Watson

DBpedia Browse using Formats Faceted Browser Sparql Endpoint

About: Rocket

An Entity of Type : [weapon](#), from Named Graph : <http://dbpedia.org>, within Data Space : [dbpedia.org](#)

A rocket (from Italian *rochetto* "bobbin") is a missile, spacecraft, aircraft or other vehicle that obtains thrust from a rocket engine. Rocket engine exhaust is formed entirely from propellant carried within the rocket before use. Rocket engines work by action and reaction and push rockets forward simply by expelling their exhaust in the opposite direction at high speed, and can therefore work in the vacuum of space.

Property	Value
dbo:abstract	<ul style="list-style-type: none">A rocket (from Italian <i>rochetto</i> "bobbin") is a missile, spacecraft, aircraft or other vehicle that obtains thrust from a rocket engine. Rocket engine exhaust is formed entirely from propellant carried within the rocket before use. Rocket engines work by action and reaction and push rockets forward simply by expelling their exhaust in the opposite direction at high speed, and can therefore work in the vacuum of space. In fact, rockets work more efficiently in space than in an atmosphere. Multi-stage rockets are capable of attaining escape velocity from Earth and therefore can achieve unlimited maximum altitude. Compared with airbreathing engines, rockets are lightweight and powerful and capable of generating large accelerations. To control their flight, rockets rely on momentum, airfoils, auxiliary reaction engines, gimballed thrust, momentum wheels, deflection of the exhaust stream, propellant flow, spin, and/or gravity. Rockets for military and recreational uses date back to at least 13th century China. Significant scientific, interplanetary and industrial use did not occur until the 20th century, when rocketry was the enabling technology for the Space Age, including setting foot on the moon. Rockets are now used for fireworks, weaponry, ejection seats, launch vehicles for artificial satellites, human spaceflight, and space exploration. Chemical rockets are the most common type of high power rocket, typically creating a high speed exhaust by the combustion of fuel with an oxidizer. The stored propellant can be a simple pressurized gas or a single liquid fuel that dissociates in the presence of a catalyst (monopropellants), two liquids that spontaneously react on contact (hypergolic propellants), two liquids that must be ignited to react, a solid combination of fuel with oxidizer (solid fuel), or solid fuel with liquid oxidizer (hybrid propellant system). Chemical rockets store a large amount of energy in an easily released form, and can be very dangerous. However, careful design, testing, construction and use minimizes risks. ^(en)
dbo:thumbnail	<ul style="list-style-type: none">wiki-commons:Special:FilePath:Soyuz_rocket_ASTP.jpg?width=300
dbo:wikiPageExternalLink	<ul style="list-style-type: none">http://www.isro.gov.in/http://ast.faa.gov/http://www.acema.com.ar/http://www.canadianrocketry.org/

IBM Cloud Catalog Docs Support Manage Search for resource... 1826603 - Robert High...

Catalog

Search the catalog... Filter

All Categories

- Compute
- Containers
- Networking
- Storage
- AI**
- Analytics
- Databases
- Developer Tools
- Integration
- Internet of Things
- Security and Identity
- Starter Kits
- Web and Mobile
- Web and Application

AI

<p>Watson Assistant Lite • IBM</p> <p>Watson Assistant lets you build conversational interfaces into any application, device, or channel.</p>	<p>Compare and Comply Lite • IBM</p> <p>Process governing documents to convert, identify, classify, and compare important elements.</p>	<p>Discovery Lite • IBM</p> <p>Add a cognitive search and content analytics engine to applications.</p>	<p>Knowledge Catalog Lite • IBM</p> <p>Discover, catalog, and securely share enterprise data.</p>
<p>Knowledge Studio Lite • IBM</p> <p>Teach Watson the language of your domain.</p>	<p>Language Translator Lite • IBM</p> <p>Translate text, documents, and websites from one language to another. Create industry or region-specific translations via the service's</p>	<p>Machine Learning Lite • IBM</p> <p>IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.</p>	<p>Natural Language Classifier IBM</p> <p>Natural Language Classifier uses advanced natural language processing and machine learning techniques to create custom classification</p>
<p>Natural Language Understanding Lite • IBM</p> <p>Analyze text to extract meta-data from content such as concepts, entities, emotion, relation, sentiment and more.</p>	<p>Personality Insights Lite • IBM</p> <p>The Watson Personality Insights derives insights from transactional and social media data to identify psychological traits.</p>	<p>Speech to Text Lite • IBM</p> <p>Low-latency, streaming transcription</p>	<p>Text to Speech Lite • IBM</p> <p>Synthesizes natural-sounding speech from text.</p>
<p>Tone Analyzer Lite • IBM</p> <p>Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, social, and language. This insight can</p>	<p>Visual Recognition Lite • IBM</p> <p>Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a default model off the shelf, or create your own</p>	<p>Watson OpenScale Lite • IBM</p> <p>IBM Watson OpenScale is an enterprise-grade environment for AI infused applications that provides enterprises with visibility into how AI is</p>	<p>Watson Studio Lite • IBM</p> <p>Embed AI and machine learning into your business. Create custom models using your own data.</p>

FEEDBACK

IBM Watson Knowledge Studio

Workspaces

[+ Create Workspace](#)

Create Workspace

Workspace name

Private Space Industry|

Language of documents

English

+ Add Workspace Description

▶ Advanced Options

Cancel

Create

A sample type system based on the *KLUE* type system is provided for you Language Understanding and Extraction and was derived by IBM Research. A sample KLUE type system from [here](#)



.

Many industries, such in domains like metallurgy, geology, market intelli

Extraction and was derived by IBM Research based

from [her](#)

- Open Link in New Tab
- Open Link in New Container Tab ▶
- Open Link in New Window
- Open Link in New Private Window

Bookmark This Link

Save Link As...

Save Link to Pocket

Copy Link Location

Search Google for "here External I..."

Send Link to Device ▶

Inspect Element

that y

Explc

e, life

of

IBM Watson Knowledge Studio

< Back to Workspaces

Assets

- Documents
- Entity Types**
- Relation Types
- Dictionaries

Rule-based Model

Machine Learning Model

Settings

Help

Entity Types

Entity Types 0 Mention Classes Mention Types

Add Entity Type Upload Upload an existing type system.

Create a type system.

<input type="checkbox"/>	Entity Type Name	Roles
--------------------------	------------------	-------

IBM Watson Knowledge Studio

< Back to Workspaces

Assets

- Documents
- Entity Types**
- Relation Types
- Dictionaries

Rule-based Model

Machine Learning Model

Settings

Entity Types

Entity Types 52 Mention Classes Mention Types

Add Entity Type Upload

<input type="checkbox"/>	Entity Type Name	Roles
<input type="checkbox"/>	AGE	

<input type="checkbox"/>	Entity Type Name	Roles	Subtypes	Action
<input checked="" type="checkbox"/>	COMPANY	Select a role	Enter a subtype	Cancel Save
		COMPANY (This type)		
<input type="checkbox"/>	AGE	AGE		Edit Delete

IBM Watson Knowledge Studio

[Back to Workspaces](#)

Relation Types

Relation Types 2177

Add Relation Type

Relation Type First Entity Type / Role

Relation Type	First Entity Type / Role	Second Entity Type / Role	Action
officerOf	OFFICER Enter an entity type name	COMPANY Enter an entity type name	Cancel Save

Warning



Your authentication expired. Click [here](#) to reapply your previous login credentials or log in again from a separate page. You can then return here to continue working.

Close

IBM Watson Knowledge Studio



highr@us.ibm.com

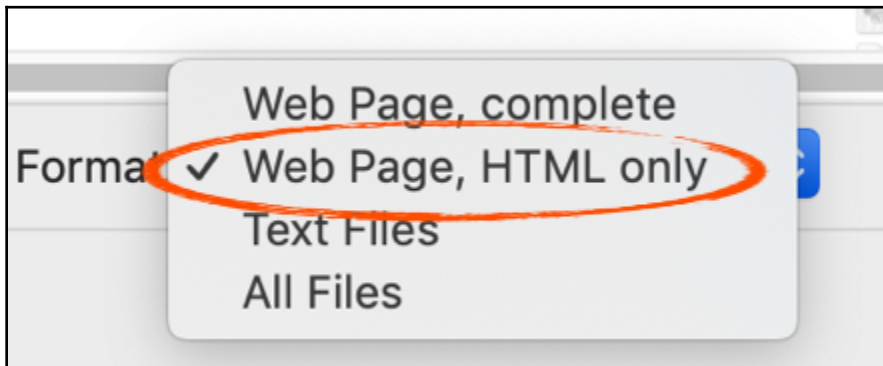
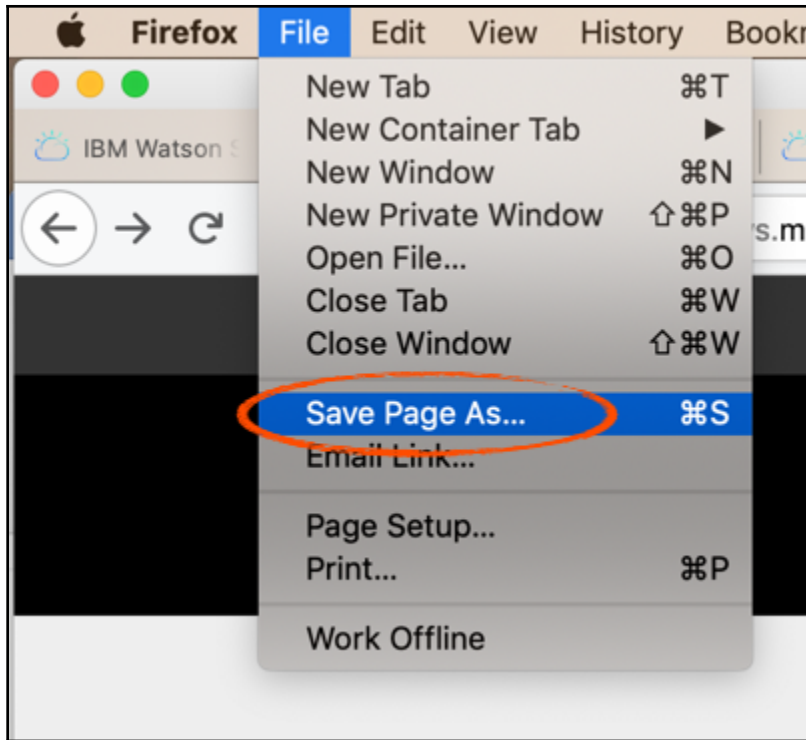
Workspaces

Create Workspace 

ENTITIES & RELATIONS 

Private Space Industry

Language: English



IBM Watson Knowledge Studio

< Back to Workspaces

Documents

Assets

- Documents**
- Entity Types
- Relation Types
- Dictionaries
- Rule-based Model
- Machine Learning Model
- Settings
- Help

Document Sets (1) Annotation Sets (0) Documents (All, 0)


Create Annotation Sets **Upload Document Sets**

Add documents to the corpus

Name

All

Add a Document Set



Drag files here, or click to browse for the files that you want to add.
Supported file types: CSV, TXT, PDF, DOC, DOCX, HTML, ZIP

For the best performance, limit the number of words in each document. Fewer than 2,000 words is good, but closer to 1,000 words is better.
[Show details about file types and upload limits](#)

Commercial space Can we privatize our way to the stars? | MIT News.html

Close **Upload**

Documents

Document Sets (11)

Annotation Sets (0)

Documents (All, 10)

Create Annotation Sets

Upload Document Sets

Divide the corpus into annotation sets and assign human annotators
Name

All

Commercial space Can we privatize our way to the stars? | MIT News.html_set

Commercial Space Flight, Private Taxis and the Future of Space Travel – Northrop Grumman.html_set

Future of Spaceflight and NASA Missions Information, Facts and Photos | National Geographic.html_set

On National Security | The SpaceX-ULA proxy war is heating up - SpaceNews.com.html_set

One small step for private companies how the future of space travel is being redefined.html_set

Private spaceflight, explained - Vox.html_set

SpaceX and NASA Launch Is First Step to Renewed Human Spaceflight - The New York Times.html_set

SpaceX's Crew Dragon Signals Sea Change in U.S. Spaceflight - Scientific American.html_set

SpaceX's Crew Dragon capsule successfully docks to the ISS for the first time - The Verge.html_set

Create Annotation Sets

Base set

All

Overlap

100

% of 10 documents

New Sets

[+ Add another set and human annotator](#)

To view inter-annotator agreement scores, assign at least two human annotators and ensure that a percentage of documents overlap between the sets.

Annotator

rob-high

Set name

Rob's Set

Cancel

Generate

IBM Watson Knowledge Studio

< Back to Workspaces

Annotation Tasks

Add Task Refresh

Add a task and assign annotation sets to the task.

- Assets
 - Documents
 - Entity Types
 - Relation Types
 - Dictionaries
- Rule-based Model
- Machine Learning Model
 - Pre-annotation
 - Annotation Tasks**
 - Performance
 - Versions
- Settings
- Help

Annotation Tasks

Add Task

Refresh

Task name

Initial Annotation

Deadline

03/10/2019

2

Cancel

Create

Add Annotation Sets to the Task

Cancel

Create Task

Annotation Set Name ⇅

Annotator Name ⇅

Task Name ⇅



Rob's Set

rob-high

Annotation Tasks

Add Task

Refresh

Initial Annotation

Deadline: 03/10/2019

Progress

0%

← Initial Annotation

Deadline: 03/10/2019

Annotations added to annotation sets are not considered ground truth until the annotation sets are submitted and accepted.
When an annotation set is accepted, documents that are annotated in only one annotation set immediately become ground truth.
Documents that are annotated in two or more annotation sets become overlapping documents that will become ground truth after conflicts are resolved.

Edit Annotation Sets

Refresh

Calculate Inter-Annotator Agreement

Check Overlapping Documents for Conflicts

Apply Type System Updates

Annotation Set Name

Annotator Name

Status

Action

Rob's Set

rob-high

IN PROGRESS

Annotate

Select Document

Close

Annotation Set: Rob's Set
 Annotator: highr@us.ibm.com
 Task: Initial Annotation

Submit All Documents

Showing 1-10 of 10

Document Name	Status	Last Modified	Actions
Commercial space Can we privatize our way to the stars? MIT News.html	Ready	Mar 10, 2019 11:21:15 AM	Open
Commercial Space Flight, Private Taxis and the Future of Space Travel – Northrop Grumman.html	Ready	Mar 10, 2019 11:24:35 AM	Open
Future of Spaceflight and NASA Missions Information, Facts and Photos National Geographic.html	Ready	Mar 10, 2019 11:24:54 AM	Open
On National Security The SpaceX-ULA proxy war is heating up - SpaceNews.com.html	Ready	Mar 10, 2019 11:25:10 AM	Open
One small step for private companies how the future of space travel is being redefined.html	Ready	Mar 10, 2019 11:25:21 AM	Open
Private spaceflight, explained - Vox.html	Ready	Mar 10, 2019 11:25:32 AM	Open
SpaceX and NASA Launch Is First Step to Renewed Human Spaceflight - The New York Times.html	Ready	Mar 10, 2019 11:25:48 AM	Open
SpaceX's Crew Dragon Signals Sea Change in U.S. Spaceflight - Scientific American.html	Ready	Mar 10, 2019 11:26:05 AM	Open
SpaceX's Crew Dragon capsule successfully docks to the ISS for the first time - The Verge.html	Ready	Mar 10, 2019 11:26:22 AM	Open
There is a ton of exciting space stuff on tap for 2019 Ars Technica.html	Ready	Mar 10, 2019 11:26:58 AM	Open

← Back to Task
Open document list

View Details
Replace
Concordance
Attribute View

Ready

Save

Mention

Relation

Coreference

Commercial space Can we privatize our way to the stars? | MIT News.html

- 1 Massachusetts Institute of Technology
- 2 News Video Social
- 3 Follow MIT
- 4 MIT News RSS Follow MIT on Twitter Follow MIT on Facebook Follow MIT on Google+ Follow MIT on Instagram Follow MIT on Flickr Follow MIT on YouTube
- 5 MIT News Office
- 6 Browse or
- 7 Browse
- 8 Most Popular
- 9 Tissue model reveals how RNA will act on the liver
- 10 President Julius Maada Bio of Sierra Leone visits MIT
- 11 Computing the future
- 12 Students helping to make islands carbon neutral

Entity

Mention

Type	Subtype	Role
i	AGE	
-	AMOUNT	
h	ANIMAL	
a	AWARD	
g	CARDINAL	
-	CEO	
-	COMPANY	
d	DATE	
g	DAY	
G	DEGREE	
J	DISEASE	
n	DURATION	
e	EMAIL	
K	EVENT	
Y	EVENT_AWARD	
h	EVENT_BUSINESS	

← Back to Task | Open document list

Ready | Save

Entity | Mention

Type Subtype Role

l	LOCATION	
k	MEASURE	
m	MONEY	
o	OFFICER	
z	ORDINAL	
x	ORGAN	
o	ORGANIZATION	
e	PEOPLE ORGANIZATION	
b	PERCENT	

Commercial space Can we privatize our way to the stars? | MIT News.html

- 1 Massachusetts Institute of Technology
- 2 News Video Social
- 3 Follow MIT
- 4 MIT News RSS Follow MIT on Twitter Follow MIT on Facebook Follow MIT on Google+ Follow MIT on Instagram Follow MIT on Flickr Follow MIT on YouTube
- 5 MIT News Office
- 6 Browse or

Commercial space Can we privatize our way to the stars? | MIT News.html

- 1 Massachusetts Institute of Technology
- 2 News Video Social
- 3 Follow MIT

IBM Watson Knowledge Studio

← Back to Workspaces | ← Back to Task | Open document list

View Details | Replace | Concordance | Attribute View

Mention | Relation | Coreference

Commercial space Can we privatize our way

- 1 Massachusetts Institute of Technology
- 2 News Video Social

Commercial space Can we privatize our way to the stars? | MIT News.html

Type	Subtype	Role
l	LOCATION	
k	MEASURE	
m	MONEY	
-	OFFICER	
z	ORDINAL	
x	ORGAN	
o	ORGANIZATION	
e	PEOPLE	
b	PERCENT	
p	PERSON	
-	PERSONPEOPLE	
-	PHONE	
-	PLANT	
Q	PRODUCT	
-	PROGRAM	
I	SUBSTANCE	
-	TICKER	
t	TIME	

1 ORGANIZATION
Massachusetts Institute of Technology

2 News Video Social

3 O...
Follow MIT

4 O... O... O... O... O... O...
MIT News RSS Follow MIT on Twitter Follow MIT on Facebook Follow MIT on Google+ Follow MIT on Instagram Follow MIT on
Flickr Follow MIT on YouTube

5 ORGANIZATION
MIT News Office

6 Browse or

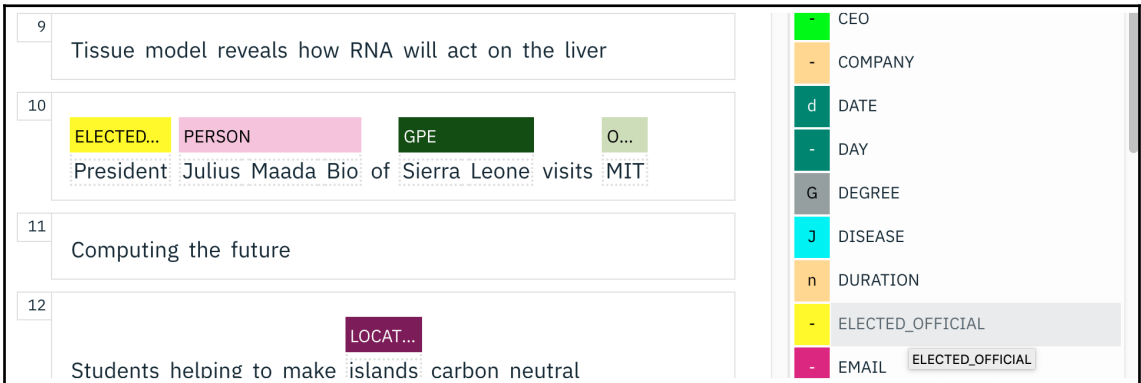
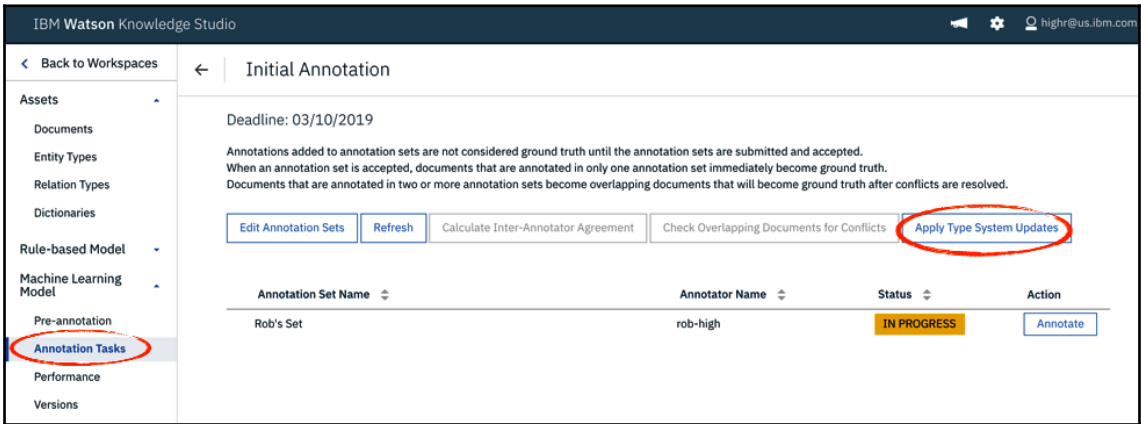
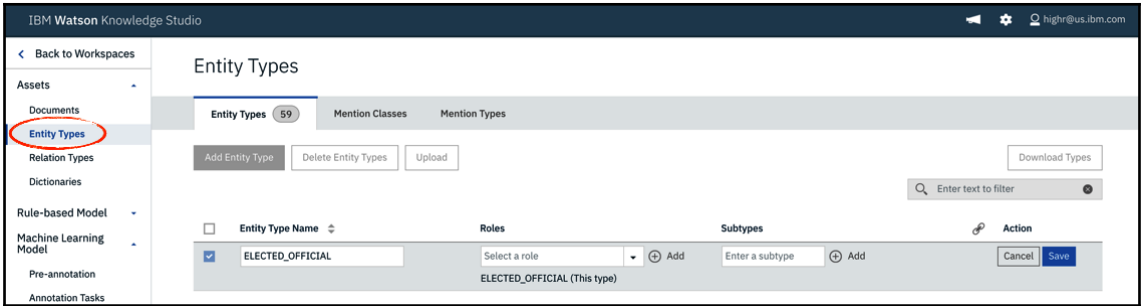
7 Browse

9 Tissue model reveals how RNA will act on the liver

10 PERSON GPE O...
President Julius Maada Bio of Sierra Leone visits MIT

11 Computing the future

12 LOCAT...
Students helping to make islands carbon neutral



151	<p>Since the DATE early 2000s, multiple private companies — such as COMP... SpaceX, COMPANY Virgin Galactic, and COMPANY Blue Origin — have been developing and deploying rockets and other technologies to enable space exploration, a sector historically controlled and funded by the federal government.</p>
152	<p>At this weekend's EVENT_MEETING New Space Age Conference, private space industry entrepreneurs and innovators descended on O... MIT's campus to showcase their novel — and at times science-fiction-like — commercial ideas and innovations that could help humanity explore the stars and planets, and benefit people here on AST... Earth.</p>

IBM Watson Knowledge Studio

← Back to Workspaces
← Back to Task
📄 Open document list

Assets

- Documents
- Entity Types
- Relation Types
- Dictionaries
- Rule-based Model
- Machine Learning Model
- Pre-annotation
- Annotation Tasks

A
Mention

🔗
Relation

⚙️
Coreference

Commercial space Can we privatize

- 1 **Massachusetts Institute of Technology**
- 2 News Video Social
- 3 Follow **MIT**
- 4 **MIT** News RSS Follow **MIT** on Twitter
Flickr Follow **MIT** on YouTube

Commercial space Can we privatize our way to the stars? | MIT News.html

1 [Massachusetts Institute of Technology](#)

2 News Video Social

3 Follow [MIT](#)

4 [MIT](#) News RSS Follow [MIT](#) on Twitter Follow [MIT](#) on Facebook Follow [MIT](#) on Google+ Follow [MIT](#) on Instagram Follow [MIT](#) on Flickr Follow [MIT](#) on YouTube

5 [MIT News Office](#)

223 This Website is maintained by the [MIT News Office](#), part of the Office of Communications.

224 About the [MIT News Office](#) [MIT](#) News Press Center Press Inquiries Filming Guidelines Office of Communications Contact Us Terms of Use

225 RSS Twitter Facebook Google+ Instagram Flickr YouTube

226 [MIT](#) Homepage [MIT](#) Video [MIT](#) Connect [MIT](#) Resources Events Calendar

227 About [MIT](#) Admissions Alumni Education Labs and Centers

228 Resources

229 Submit Campus News Pitch a Story Sign Up for Newsletter Subscribe to Press Releases Terms of Use

230 GIVE TO [MIT](#)

231 [Massachusetts Institute of Technology](#)

232 [MIT News Office](#) • Building 11-400

233 [Massachusetts Institute of Technology](#) • Cambridge, MA 02139-4307

234 [Back to the top](#)

Alphab... 14pt 1

In Progress Save

Astronautics MIT #1

Coreference Chains

ID	Text	Size
<input type="checkbox"/> #1	Massachusetts Institute of Technology	25 ×

Select Document Close

Annotation Set: Rob's Set
 Annotator: highr@us.ibm.com
 Task: Initial Annotation

[Submit All Documents](#) Showing 1-10 of 10

Document Name	Status	Last Modified	Actions
Future of Spaceflight and NASA Missions Information, Facts and Photos National Geographic.html	In Progress	Mar 10, 2019 11:24:54 AM	Open
On National Security The SpaceX-ULA proxy war is heating up - SpaceNews.com.html	In Progress	Mar 10, 2019 11:25:10 AM	Open
One small step for private companies how the future of space travel is being redefined.html	In Progress	Mar 10, 2019 11:25:21 AM	Open
Private spaceflight, explained - Vox.html	In Progress	Mar 10, 2019 11:25:32 AM	Open
Commercial space Can we privatize our way to the stars? MIT News.html	In Progress	Mar 10, 2019 1:22:00 PM	Open
There is a ton of exciting space stuff on tap for 2019 Ars Technica.html	In Progress	Mar 10, 2019 1:24:20 PM	Open
SpaceX's Crew Dragon capsule successfully docks to the ISS for the first time - The Verge.html	In Progress	Mar 10, 2019 1:24:49 PM	Open
SpaceX's Crew Dragon Signals Sea Change in U.S. Spaceflight - Scientific American.html	In Progress	Mar 10, 2019 1:25:10 PM	Open
SpaceX and NASA Launch Is First Step to Renewed Human Spaceflight - The New York Times.html	In Progress	Mar 10, 2019 1:25:31 PM	Open
Commercial Space Flight, Private Taxis and the Future of Space Travel - Northrop Grumman.html	In Progress	Mar 10, 2019 1:26:02 PM	Open

← Back to Task [Open document list](#)

View Details Replace Concordance Attribute View

Commercial space Can we privatize our way to the stars? | MIT News.html

1 Massachusetts Institute of Technology

In Progress Completed Save

Entity
Type
AGE

← Initial Annotation

Deadline: 03/10/2019

Annotations added to annotation sets are not considered ground truth until the annotation sets are submitted and accepted. When an annotation set is accepted, documents that are annotated in only one annotation set immediately become ground truth. Documents that are annotated in two or more annotation sets become overlapping documents that will become ground truth after conflicts are resolved.

Annotation Set Name	Annotator Name	Status	Action
<input checked="" type="checkbox"/> Rob's Set	rob-high	SUBMITTED	<input type="button" value="View"/>

IBM Watson Knowledge Studio

← Back to Workspaces

Assets

- Documents
- Entity Types
- Relation Types
- Dictionaries
- Rule-based Model
- Machine Learning Model
- Pre-annotation
- Annotation Tasks
- Performance**
- Versions
- Settings
- Help

Performance

Private Space Industry

Language of documents: English

Number of documents per set

- 0 Training Set
- 0 Test Set
- 0 Blind Set

Training Set

Test Set

Last trained on:

Last evaluated on:

You have not trained the machine learning model. Click here to train and evaluate it.

Document set evaluation ⓘ

Model over time

Model over time	Mention
1	Precision: -- Recall: --
0.80	Precision: --

Relation

-- Precision: --

← Training / Test / Blind Sets

Select Training/ Test/ Blind Sets

Document Set	Task Status
<input checked="" type="checkbox"/> All	
<input type="checkbox"/> Commercial space Can we privatize our ...	
<input type="checkbox"/> Commercial Space Flight, Private Taxic a...	
<input type="checkbox"/> Future of Spaceflight and NASA Missions...	
<input type="checkbox"/> On National Security The SpaceX-ULA p...	
<input type="checkbox"/> One small step for private companies ho...	
<input type="checkbox"/> Private spaceflight, explained - Vox.html...	
<input type="checkbox"/> SpaceX and NASA Launch Is First Step to...	
<input type="checkbox"/> SpaceX's Crew Dragon Signals Sea Chan...	
<input type="checkbox"/> SpaceX's Crew Dragon capsule successf...	
<input type="checkbox"/> There is a ton of exciting space stuff on t...	
<input type="checkbox"/> Rob's Set	COMPLETED

Create new sets by splitting the selected document sets

Ratio
Enter the percentage of documents to include in each set.

Training Set (70% Recommended)

Test Set (23% Recommended)

Blind Set (7% Recommended)

IBM Watson Knowledge Studio

← Back to Workspaces

Performance

Private Space Industry

Language of documents: English

Number of documents per set

- 7 Training Set
- 2 Test Set
- 1 Blind Set

Training Set

[View Ground Truth](#)

Test Set

[View Ground Truth](#)

[View Decoding Results](#)

Last trained on:

Last evaluated on:

You have not trained the machine learning model. Click here to train and evaluate it.

Performance

Private Space Industry

Language of documents
English

Number of documents per set



7 Training Set
2 Test Set
1 Blind Set



Training Set

[View Ground Truth](#)

Test Set

[View Ground Truth](#)

[View Decoding Results](#)

Last trained on:

Mar 5, 2019 7:01:05 PM

Last evaluated on:

Mar 5, 2019 7:06:08 PM

[Train and evaluate](#)

Low performance? Click here to train.

Document set evaluation ?

Model over time



[View Log](#)

Mention

0.72 Precision: 0.79
Recall: 0.66

Relation

-- Precision: --
Recall: --

Coreference

-- Precision: --
Recall: --

Low performing range

[Back to Workspaces](#)

Assets

Documents

Entity Types

Relation Types

Dictionaries

Rule-based Model

Machine Learning Model

Pre-annotation

Annotation Tasks

Performance

Versions

Settings

Help

Versions

Machine Learning Model

Machine learning models, once trained, can be used to annotate new documents prior to human annotation.

[Run this model](#)

Export the current version of your model to use in other Watson applications such as Watson Explorer.

[Export current model](#)

Version History and Deployment

Version	Base	Creation Date	Entity Scores	Relation Scores	Description	Action
1.0		Current Version	0.90 (0.90 / 0.90)	N/A		Create Version

Version History and Deployment

Version	Base	Creation Date	Entity Scores	Relation Scores	Description	Action
1.1		<i>Current Version</i>	0.90 (0.90 / 0.90)	N/A		Create Version
1.0		03/10/2019	0.90 (0.90 / 0.90)	N/A		Promote Delete Deploy

Deploy Model v1.0

Select a service to deploy to.

All services require a subscription. [Learn more](#)

- Natural Language Understanding**
- Discovery**

Cancel

Next

Deploy Model v1.0

Deploying to Natural Language Understanding

You must have a subscription to the IBM Watson™ Natural Language Understanding service, and know the names of your IBM Cloud space and service instance. [Learn more](#)

IBM Cloud Information

IBM Cloud is the IBM cloud platform. Click [here](#) to open IBM Cloud and create an account or look up details for an existing service.

Region

Dallas

Space or resource group

Spaces Resource groups

default

Service name

Natural Language Understanding-4a

Cancel

Deploy

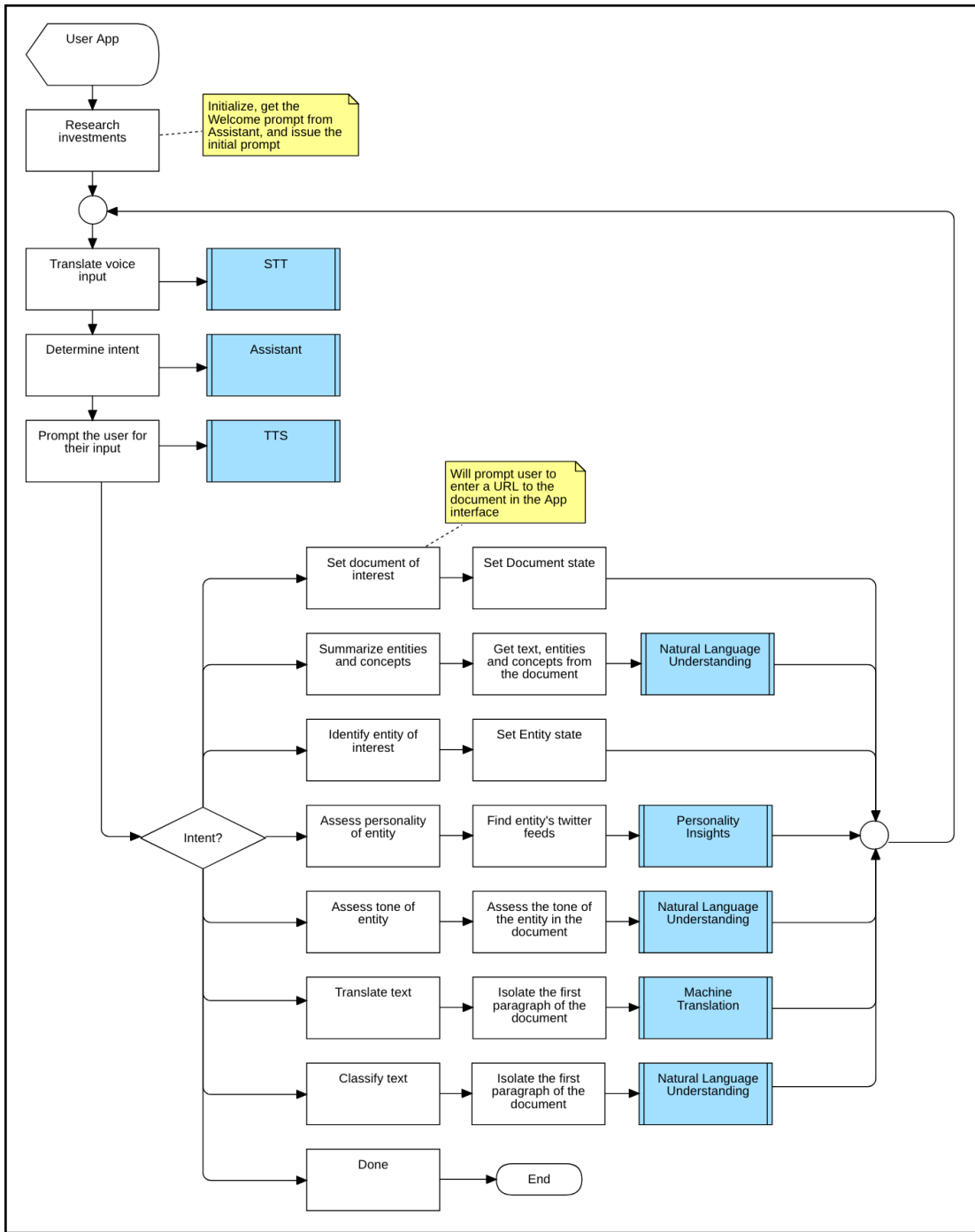
Version History and Deployment

Version	Base	Creation Date	Entity Scores	Relation Scores	Description	Action
1.1		<i>Current Version</i>	0.72 (0.79 / 0.66)	N/A		Create Version
1.0		03/05/2019	0.72 (0.79 / 0.66)	N/A		Promote Delete Deploy
▼ Deployed Models (1)						
		Model ID: 7a8d0323-939b-4dbc-afa8-1a60d7966c67		Service ID: 78e8c50d-ad24-42f8-a8da-d1adfef8f973		Undeploy Status

Version History and Deployment

Version	Base	Creation Date	Entity Scores	Relation Scores	Description	Action
1.1		<i>Current Version</i>	0.72 (0.79 / 0.66)	N/A		Create Version
1.0		03/05/2019	0.72 (0.79 / 0.66)	N/A		Promote Delete Deploy
▼ Deployed Models (1)						
		Model ID: 7a8d0323-939b-4dbc-afa8-1a60d7966c67		Service ID: 78e8c50d-ad24-42f8-a8da-d1adfef8f973		Undeploy Status

Chapter 8: Putting It All Together with Watson



```
35 # Create a control object
36 SPEECH_CONTROL = StreamSpeechControl()
```

```
38 # Prepare a thread to recognize the input from the microphone input
39 recognize_thread = Thread(target=recognizeUsingWebsocket, args=(SPEECH_CONTROL,))
40 recognize_thread.start()
```

```
64 # Get instances of the needed microphone stream
65 microphoneStream = SPEECH_CONTROL.initAudio()
```

```
67 # Wait for the speech service to transcribe input from the user
68 while not SPEECH_CONTROL.MYCALLBACK.isTextTranscribed():
69     pass
```

```
71 # Process the transcribed input
72 transcript = SPEECH_CONTROL.MYCALLBACK.getTranscription(True)
```

```
74 # Turn off the microphone while the transcribed text is being processed
75 SPEECH_CONTROL.terminateAudio(microphoneStream)
```

```
77 # Figure out the confidence of the resulting text
78 confidence = int(round(100*transcript[0].get("confidence")))
79 utterance = transcript[0].get("transcript")
80 print("You: " + utterance)
81
82 if confidence < confidence_threshold:
83     print("Watson had poor confidence in what you said.")
84     utterance = "Garbage"
```

```
33 # Prep voice input
34 confidence_threshold = 50 # Watson must be greater than this confidence to accept the voice input
```

```
20 # Create session with the Watson Assistant
21 assistant = ibm_watson.AssistantV1(
22     iam_apikey='PrLJLVykZG4V-FQrADLiZG91oOKcJN0UZWEUAo0HxW8Q',
23     version='2018-09-20')
24 workspace_id = "beb32203-c974-46dd-997f-f91f0968acf5"
```

```
86 # Invoke Watson to assess the intent of the utterance and determine how
87 # to respond to the user
88 response = assistant.message(
89     workspace_id,
90     input={'text': utterance},
91     context=context).get_result()
92
93 # Get the text and context of the response
94 response_text = response.get("output").get("text")
95 context = response.get("context")
```

```
29 # Prep speech output
30 speechSession = initTextSpeech()
31 voice = 'en-US_AllisonVoice'
```

```
53 # Display and Say all of the text provided in the prompt
54 for text in prompt:
55     speakAndPrint(text)
```

```
16 def speakAndPrint(text):
17     print("Watson: {}".format(text))
18     textSpeech(text=text, voice=voice, session=speechSession)
```

```
98 # Display and Say all of the text provided in the response
99 for text_line in response_text:
100     speakAndPrint(text_line)
```

```
16     # Synthesize the expressed text in the indicated voice
17     audio_file=open('glad_to_be_here.wav', 'wb')
18     audio_file.write(
19         session.synthesize(
20             text,
21             accept='audio/wav',
22             voice=voice).get_result().content)
23     audio_file.close()
```

```
113     # Process the #Document-Of-Interest intent
114     elif (response["intents"][0]["intent"] == "Document-Of-Interest") and (context.get("research_document")):
115         document_of_interest = response.get("context").get("research_document")
```

```
117     # Process the #Document-Of-Interest intent and prompt for the document URL if needed
118     elif (response["intents"][0]["intent"] == "Document-Of-Interest"):
119         try:
120             research_URL = raw_input("What URL do you want to research? ==> ")
121         except NameError:
122             research_URL = input("What URL do you want to research? ==> ")
123         utterance = "Let's do research on the document at: " + research_URL
124         response = assistant.message(
125             workspace_id,
126             input={'text': utterance},
127             context=context).get_result()
128         # Get the text and context of the response
129         response_text = response.get("output").get("text")
130         context = response.get("context")
131         # Display and Say all of the text provided in the response
132         for text_line in response_text:
133             speakAndPrint(text_line)
```

```

135 # Summarize the document
136 elif (response["intents"][0]["intent"] == "Summarize-Document") and (context.get("research_document")):
137     # Enumrate the article content
138     article_text = getText(research_URL, session=nluSession)
139     print(article_text)
140     # Enumerate the enties found in the document
141     entities = preprocessEntities(getEntities(research_URL, limit=5, session=nluSession))
142     if len(entities) > 0:
143         speakAndPrint("The following entities were found:")
144         text_line = ''
145         for i in range(len(entities)-1):
146             text_line = text_line + entities[i].get("text") + ", "
147         if len(entities) > 1:
148             text_line = text_line + "and "
149             text_line = text_line + entities[len(entities)-1].get("text")
150         speakAndPrint(text_line)
151     else:
152         speakAndPrint("No entites were mentioned in the document")
153     # Enumerate the document categories
154     categories = getCategories(research_URL, session=nluSession)
155     speakAndPrint("The article spoke about these concepts:")
156     for concept in categories:
157         speakAndPrint(concept.get("label"))

```

```

159 # Process the #Entity-Of-Interest intent
160 elif (response["intents"][0]["intent"] == "Entity-Of-Interest") and (context.get("research_entity")):
161     entity_of_interest = disambiguateEntity(response.get("context").get("research_entity"), entities)

```

```

163 # Process the #Entity-Personality intent
164 elif response["intents"][0]["intent"] == "Entity-Personality":
165     entity_twitter = entity2twitter(entity_of_interest)
166     if entity_twitter == None:
167         speakAndPrint("Sorry, I couldn't find a twitter handle for " + entity_twitter["text"])
168     else:
169         speakAndPrint("Here's a twitter-based personality analysis for " + entity_twitter["text"])
170         print(prettyPrintProfile(getProfile(tweets(entity_twitter))))

```

```

172 # Process the #Entity-Tone intent
173 elif response["intents"][0]["intent"] == "Entity-Tone":
174     speakAndPrint("The sentiment of " + entity_of_interest["text"] + " is " +
                    entity_of_interest["sentiment"]["label"] + " with an intensity of " +
                    str(entity_of_interest["sentiment"]["score"]))

```

```

183 # Process the #Translate-Research intent
184 elif (response["intents"][0]["intent"] == "Translate-Research") and (context.get("translation_language")):
185     article_text = getText(research_URL, session=nluSession)
186     translated_article = translate(article_text, response.get("context").get("translation_language"))
187     speakAndPrint("I've translated your document to " + context.get("translation_language"))
188     print(translated_article)

```

```
176 # Process the #Classify-Text intent
177 elif response["intents"][0]["intent"] == "Classify-Text":
178     categories = getCategories(research_URL, session=nluSession)
179     speakAndPrint("The document generally falls into the following categories:")
180     for (category_index, category) in enumerate(categories):
181         speakAndPrint("Category " + str(category_index) + " : " + category["label"])
```

Create Dialog Skill

Create a new skill, start building a skill using the customer care sample, or import an existing skill.

Create skill

Use sample skill

Import skill

Select the JSON file for the dialog skill with the data you want to import and choose the artifacts to import to the new skill.

Choose JSON File

- Everything (Intents, Entities, and Dialog)
- Intents and Entities

Import

Graphics Bundle Ends Here

Index