

# API\_2

September 14, 2021

## 1 Watson Speech to Text Translator

Estimated time needed: **25** minutes

### 1.1 Objectives

After completing this lab you will be able to:

- Operate a Speech to Text Translator through an API

#### 1.1.1 Introduction

In this notebook, you will learn to convert an audio file of an English speaker to text using a Speech to Text API. Then, you will translate the English version to a Spanish version using a Language Translator API. Note: You must obtain the API keys and endpoints to complete the lab.

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Exercise

```
[ ]: #you will need the following library  
!pip install ibm_watson wget
```

Speech to Text

First we import SpeechToTextV1 from ibm\_watson. For more information on the API, please click on this link.

```
[ ]: from ibm_watson import SpeechToTextV1  
import json  
from ibm_cloud_sdk_core.authenticators import IAMAuthenticator
```

The service endpoint is based on the location of the service instance, we store the information in the variable URL. To find out which URL to use, view the service credentials and paste the url here.

```
[ ]: url_s2t = ""
```

You require an API key, and you can obtain the key on the Dashboard .

```
[ ]: iam_apikey_s2t = ""
```

You create a Speech To Text Adapter object the parameters are the endpoint and API key.

```
[ ]: authenticator = IAMAuthenticator(iam_apikey_s2t)
s2t = SpeechToTextV1(authenticator=authenticator)
s2t.set_service_url(url_s2t)
s2t
```

Lets download the audio file that we will use to convert into text.

```
[ ]: !wget -O PolynomialRegressionandPipelines.mp3 https://cf-courses-data.s3.us.
↪cloud-object-storage.appdomain.cloud/
↪IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/data/
↪PolynomialRegressionandPipelines.mp3
```

We have the path of the .wav file we would like to convert to text

```
[ ]: filename='PolynomialRegressionandPipelines.mp3'
```

We create the file object wav with the wav file using open. We set the mode to “rb” , this is similar to read mode, but it ensures the file is in binary mode. We use the method recognize to return the recognized text. The parameter audio is the file object wav, the parameter content\_type is the format of the audio file.

```
[ ]: with open(filename, mode="rb") as wav:
    response = s2t.recognize(audio=wav, content_type='audio/mp3')
```

The attribute result contains a dictionary that includes the translation:

```
[ ]: response.result
```

```
[ ]: from pandas import json_normalize

    json_normalize(response.result['results'], "alternatives")
```

```
[ ]: response
```

We can obtain the recognized text and assign it to the variable recognized\_text:

```
[ ]: recognized_text=response.result['results'][0]["alternatives"][0]["transcript"]
    type(recognized_text)
```

Language Translator

First we import LanguageTranslatorV3 from ibm\_watson. For more information on the API click [here](#)

```
[ ]: from ibm_watson import LanguageTranslatorV3
```

The service endpoint is based on the location of the service instance, we store the information in the variable URL. To find out which URL to use, view the service credentials.

```
[ ]: url_lt=''
```

You require an API key, and you can obtain the key on the Dashboard.

```
[ ]: apikey_lt=''
```

API requests require a version parameter that takes a date in the format version=YYYY-MM-DD. This lab describes the current version of Language Translator, 2018-05-01

```
[ ]: version_lt='2018-05-01'
```

we create a Language Translator object language\_translator:

```
[ ]: authenticator = IAMAuthenticator(apikey_lt)
language_translator =
↳ LanguageTranslatorV3(version=version_lt,authenticator=authenticator)
language_translator.set_service_url(url_lt)
language_translator
```

We can get a Lists the languages that the service can identify. The method Returns the language code. For example English (en) to Spanis (es) and name of each language.

```
[ ]: from pandas import json_normalize

json_normalize(language_translator.list_identifiable_languages().get_result(),
↳ "languages")
```

We can use the method translate. This will translate the text. The parameter text is the text, Model\_id is the type of model we would like to use we use list the language. In this case, we set it to 'en-es' or English to Spanish. We get a Detailed Response object translation\_response

```
[ ]: translation_response = language_translator.translate(\
    text=recognized_text, model_id='en-es')
translation_response
```

The result is a dictionary.

```
[ ]: translation=translation_response.get_result()
translation
```

We can obtain the actual translation as a string as follows:

```
[ ]: spanish_translation =translation['translations'][0]['translation']
spanish_translation
```

We can translate back to English

```
[ ]: translation_new = language_translator.translate(text=spanish_translation_↵
↵,model_id='es-en').get_result()
```

We can obtain the actual translation as a string as follows:

```
[ ]: translation_eng=translation_new['translations'][0]['translation']
translation_eng
```

Quiz

Translate to French.

```
[ ]: # Write your code below and press Shift+Enter to execute
```

Click here for the solution

```
French_translation=language_translator.translate(
    text=translation_eng , model_id='en-fr').get_result()
```

```
French_translation['translations'][0]['translation']
```

Language Translator

References

<https://cloud.ibm.com/apidocs/speech-to-text?code=python>

<https://cloud.ibm.com/apidocs/language-translator?code=python>

## 1.2 Authors:

[Joseph Santarcangelo](#)

Joseph Santarcangelo has a PhD in Electrical Engineering, his research focused on using machine learning, signal processing, and computer vision to determine how videos impact human cognition. Joseph has been working for IBM since he completed his PhD.

## 1.3 Other Contributor(s)

Fan Jiang

## 1.4 Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2021-04-07	2.2	Malika	Updated the libraries
2021-01-05	2.1	Malika	Added a library
2020-08-26	2.0	Lavanya	Moved lab to course repo in GitLab

##

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