Documentation on Sentiment analysis with Cognitive Services

In this tutorial, you'll learn how to easily enrich your data in Azure Synapse Analytics with Azure Cognitive Services. You'll use the Text Analytics capabilities to perform sentiment analysis.

A user in Azure Synapse can simply select a table that contains a text column to enrich with sentiments. These sentiments can be positive, negative, mixed, or neutral. A probability will also be returned.

This tutorial covers:

- ✓ Steps for getting a Spark table dataset that contains a text column for sentiment analysis.
- ✓ Using a wizard experience in Azure Synapse to enrich data by using Text Analytics in Cognitive Services.

If you don't have an Azure subscription, create a free account before you begin .

Prerequisites

- Azure Synapse Analytics workspace with an Azure Data Lake Storage Gen2 storage account configured as the default storage. You need to be the *Storage Blob Data Contributor* of the Data Lake Storage Gen2 file system that you work with.
- Spark pool in your Azure Synapse Analytics workspace. For details, see Create a Spark pool in Azure Synapse.
- Pre-configuration steps described in the tutorial Configure Cognitive Services in Azure Synapse.

Sign in to the Azure portal

Sign in to the Azure portal .

Create a Spark table
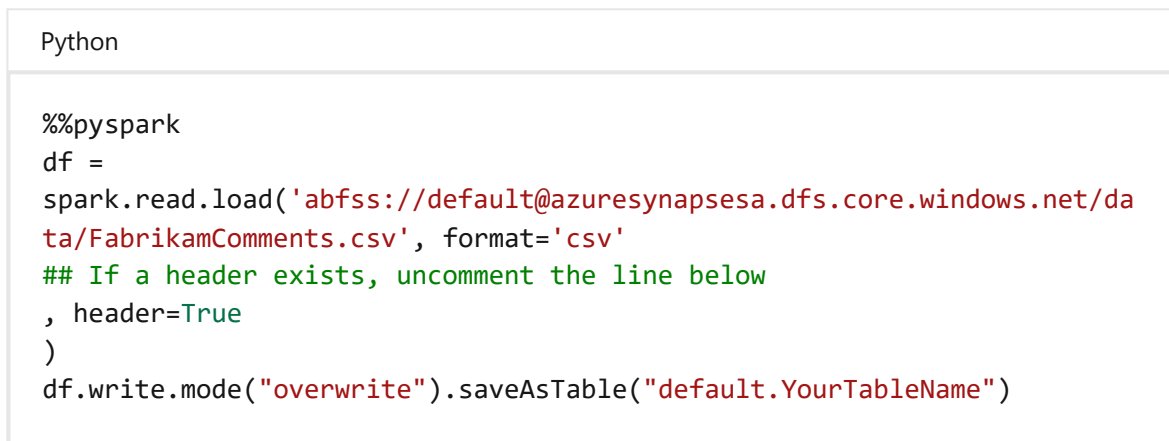
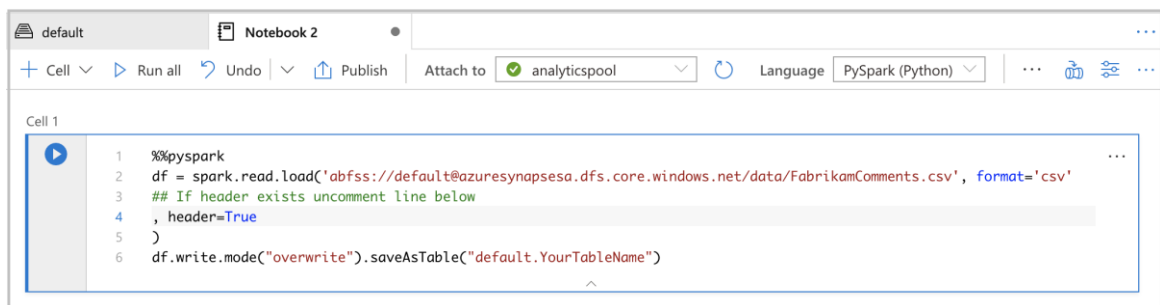You'll need a Spark table for this tutorial.

1. Download the [FabrikamComments.csv](#) file, which contains a dataset for text analytics.

2. Upload the file to your Azure Synapse storage account in Data Lake Storage Gen2.
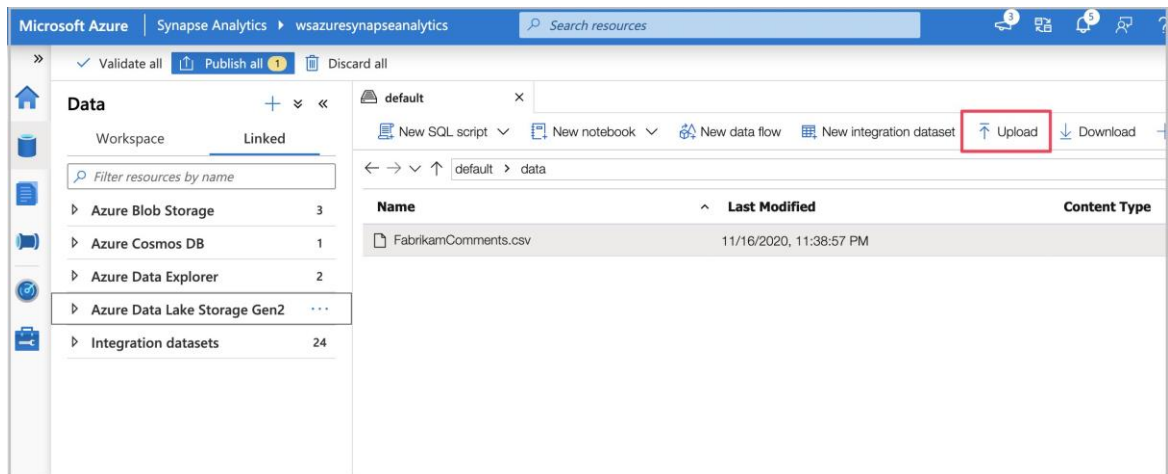
3. Create a Spark table from the .csv file by right-clicking the file and selecting **New Notebook** > **Create Spark table**.
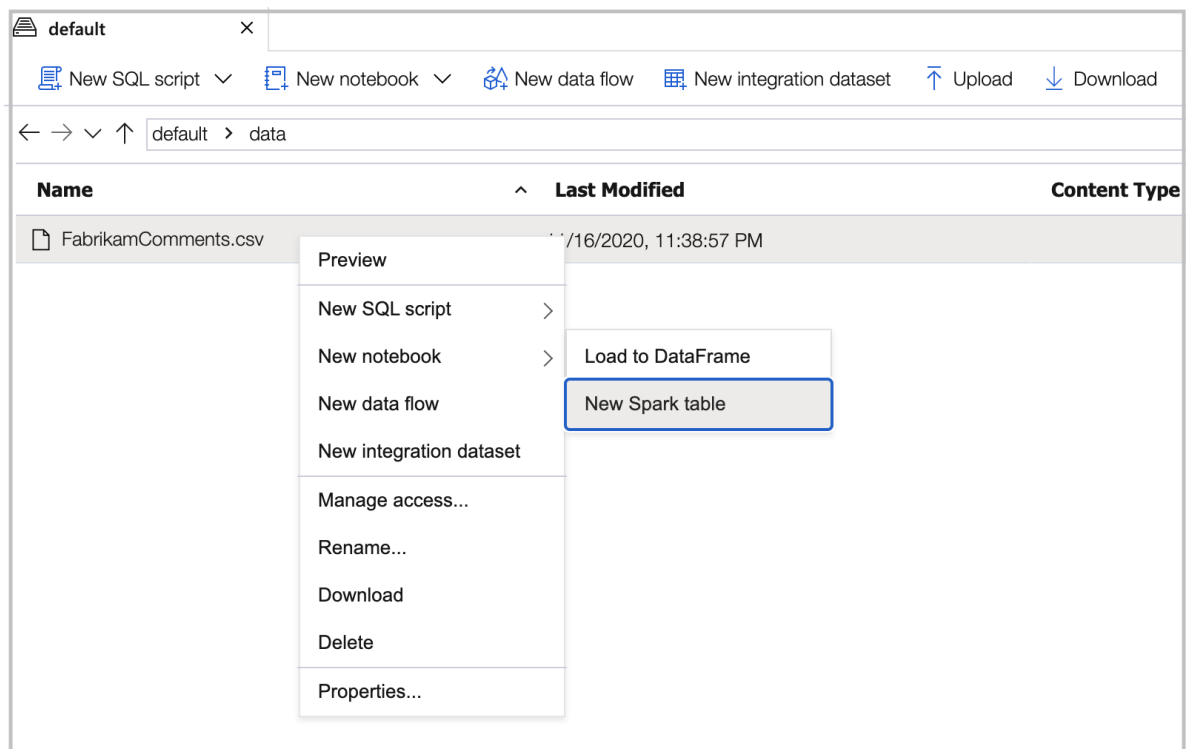

4. Name the table in the code cell and run the notebook on a Spark pool. Remember to set `header=True`.

Python

```
%%pyspark
df =
spark.read.load('abfss://default@azuresynapsesa.dfs.core.windows.net/da
ta/FabrikamComments.csv', format='csv'
## If a header exists, uncomment the line below
, header=True
)
df.write.mode("overwrite").saveAsTable("default.YourTableName")
```

Open the Cognitive Services wizard

1. Right-click the Spark table created in the previous procedure. Select **Machine Learning** > **Predict with a model** to open the wizard.
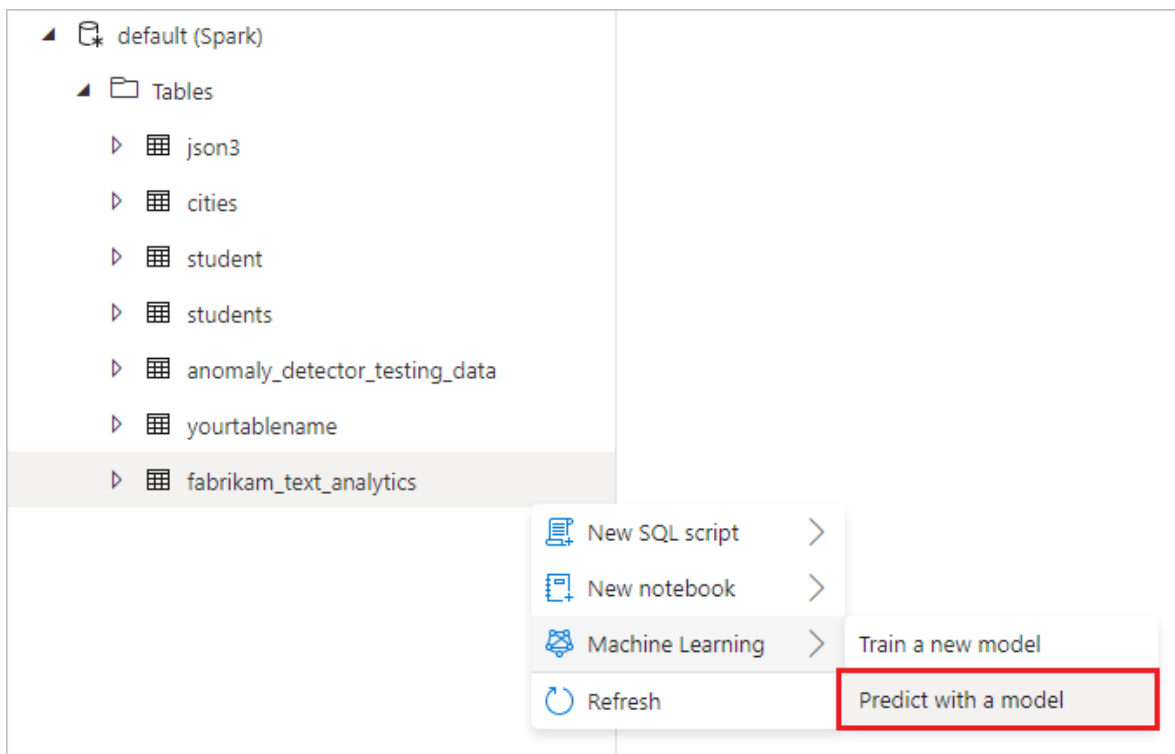
2. A configuration panel appears, and you're asked to select a Cognitive Services model. Select **Sentiment Analysis**.

Configure sentiment analysis

Next, configure the sentiment analysis. Select the following details:

- **Azure Cognitive Services linked service**: As part of the prerequisite steps, you created a linked service to your Cognitive Services . Select it here.
- **Language**: Select **English** as the language of the text that you want to perform sentiment analysis on.
- **Text column**: Select **comment (string)** as the text column in your dataset that you want to analyze to determine the sentiment.

When you're done, select **Open notebook**. This generates a notebook for you with PySpark code that performs the sentiment analysis with Azure Cognitive Services.

Predict with a model

▦ fabrikamcomments

Sentiment Analysis

Evaluate the opinion of a text, and then return a score that indicates the positive, negative, or neutral sentiment. To get started, select an Azure Cognitive Services linked Service. Learn more ⧉

Azure Cognitive Services linked service * ⓘ

TextAnalytics	⌄

Language * ⓘ

English	⌄

Text column * ⓘ

comment (string)	⌄

Open notebook	Back		Cancel

Run the notebook

The notebook that you just opened uses the SynapseML library ⧉ to connect to Cognitive Services. The Azure Cognitive Services linked service that you provided allow you to securely reference your cognitive service from this experience without revealing any secrets.

You can now run all cells to enrich your data with sentiments. Select **Run all**.

The sentiments are returned as **positive**, **negative**, **neutral**, or **mixed**. You also get probabilities per sentiment. Learn more about sentiment analysis in Cognitive Services.

✔ Ready

M↓

```python
1   from mmlspark.cognitive import *
2   from notebookutils import mssparkutils
3   from pyspark.sql.functions import explode
4
5   # Load the data into a Spark DataFrame
6   df = spark.sql("SELECT * FROM default.fabrikamcomments")
7
8   sentiment = (TextSentiment()
9       .setLinkedService("TextAnalytics")
10      .setOutputCol("output")
11      .setErrorCol("error")
12      .setLanguage("en")
13      .setTextCol("comment"))
14
15  results = sentiment.transform(df)
16
17  # Show the results
18  display(results\
19      .select("comment", explode("output").alias("exploded"), "error")\
20      .select("comment", "exploded.*", "error")\
21      .limit(10))
```

[1] ✔ 2 min 49 sec - Apache Spark session started in 2 min 7 sec 825 ms. Command executed in 41 sec 258 ms by ruxu on 4:17:09 PM, 10/19/21

› Job execution Succeeded Spark 2 executors 16 cores   View in monitoring   Open Spark UI↗

View [Table | Chart]   ⟼ Export results ∨

comment	sentiment	statistics	confidenceScores	sentences	warnings
I ordered three widgets last week...	mixed	undefined	▸ "{"positive":0.26,"neutral":0.01,"neg	▸ "[{"sentiment":"neutral","confidenc	"[]"
Can't believe you fools shipped ...	negative	undefined	▸ "{"positive":0.03,"neutral":0.05,"neg	▸ "[{"sentiment":"negative","confider	"[]"
Wow! I had NO IDEA that recipro...	mixed	undefined	▸ "{"positive":0.5,"neutral":0.04,"nega	▸ "[{"sentiment":"positive","confiden	"[]"
Jake, I've had similar problems tr...	mixed	undefined	▸ "{"positive":0.44,"neutral":0.03,"neg	▸ "[{"sentiment":"negative","confider	"[]"
That hand model needs a manic...	neutral	undefined	▸ "{"positive":0.01,"neutral":0.99,"neg	▸ "[{"sentiment":"neutral","confidenc	"[]"
I put my wedding ring in a Bag o...	negative	undefined	▸ "{"positive":0,"neutral":0.02,"negati	▸ "[{"sentiment":"neutral","confidenc	"[]"
David, sorry, it's whatchamacallit...	negative	undefined	▸ "{"positive":0,"neutral":0,"negative"	▸ "[{"sentiment":"negative","confider	"[]"
Hi folks. According to your encab...	negative	undefined	▸ "{"positive":0,"neutral":0,"negative"	▸ "[{"sentiment":"neutral","confidenc	"[]"
Jake, it's probably none of my bu...	positive	undefined	▸ "{"positive":0.99,"neutral":0,"negati	▸ "[{"sentiment":"positive","confiden	"[]"
Maria, I'm pretty sure the folks at...	positive	undefined	▸ "{"positive":1,"neutral":0,"negative"	▸ "[{"sentiment":"neutral","confidenc	"[]"