Microsoft Applied Skills:
Build a natural language processing solution with Azure AI Language
Python code

Language detection

```
# pip install azure-ai-textanalytics==5.3.0
from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

endpoint = ""
key = ""

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["The dishes were exquisitely prepared, and the generous hospitality was unmatched."]

response = client.detect_language(documents=texttoanalyse)[0]

print(f"{response.primary_language.name} - {response.primary_language.iso6391_name} -
{response.primary_language.confidence_score}")
```

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Key phrase extraction

.env File

```
AZURE_ENDPOINT = https://maslanguage240304.cognitiveservices.azure.com/
AZURE_KEY = dad73d2705fa48b19d7f2942e67e5355
```

Main file

```
# pip install azure-ai-textanalytics==5.3.0
from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

import os
from dotenv import load_dotenv

load_dotenv()

endpoint = os.getenv("AZURE_ENDPOINT")
key = os.getenv("AZURE_KEY")

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["The dishes were exquisitely prepared, and the generous hospitality was unmatched."]

response = client.extract_key_phrases(documents=texttoanalyse)[0]

for keyphrase in response.key_phrases:
    print(keyphrase)
```

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Named Entity Recognition (NER)- prebuilt

```
# pip install azure-ai-textanalytics==5.3.0
from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

endpoint = ""
key = ""

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["In the heart of the ancient city, on a bright morning of May 5th, 2024, 72-year-old Maria embarked on her journey. With her 50 euros, she was at the grand opening of the new 2,000 square meter museum, which would start at 10:30 AM, and last until 3:00 PM. Being the third person in line, she could hardly contain her excitement in the pleasant 23°C sunshine. She would come back every week."]

response = client.recognize_entities(documents=texttoanalyse)[0]

for entity in response.entities:
    print(f"{entity.text}")
    print(f"Category: {entity.category}    {entity.subcategory}")
    print(f"Confidence Score: {entity.confidence_score}")
    print(f"Length and Offset: {entity.length} - {entity.offset}\n")
```

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Personally Identifiable Information (PII) detection

```
# pip install azure-ai-textanalytics==5.3.0
from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

endpoint = ""
key = ""

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["I, Alexander Defort of My Company Limited (company number 12345678), purchased yesterday a computer
costing US$1,000. I used my VISA credit card, number 4523 4859 3953 1235, and expiry date 07/29. However, the computer
has not yet arrived. Can you please call me on 555-0123 to resolve this issue."]

response = client.recognize_pii_entities(documents=texttoanalyse)[0]

print(f"{response.redacted_text}")

for entity in response.entities:
    print(f"{entity.text}")
    print(f"Category: {entity.category}    {entity.subcategory}")
    print(f"Confidence Score: {entity.confidence_score}")
    print(f"Length and Offset: {entity.length} - {entity.offset}\n")
```

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Entity linking

```
# pip install azure-ai-textanalytics==5.3.0
from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

endpoint = ""
key = ""

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["I then ate some chocolate - I think it was a Mars bar."]

response = client.recognize_linked_entities(documents=texttoanalyse)[0]

for entity in response.entities:
    print(f"{entity.name}")
    print(f"{entity.url} from {entity.data_source}")
    for match in entity.matches:
        print(f"\tText: {match.text}")
        print(f"\tConfidence Score: {match.confidence_score}\n")
```

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Sentiment analysis and opinion mining

```
# pip install azure-ai-textanalytics==5.3.0

from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

endpoint = ""
key = ""

client = TextAnalyticsClient(endpoint = endpoint, credential=AzureKeyCredential(key))

texttoanalyse = ["The dishes were exquisitely prepared, and the generous hospitality was unmatched.",
                 "The dishes were awful, and the atmosphere was terrible."]

response = client.analyze_sentiment(documents=texttoanalyse, show_opinion_mining=True)

for document in response:
    print(f"Document sentiment: {document.sentiment}")
    print(f"Positive {document.confidence_scores.positive}, " +
          f"Neutral {document.confidence_scores.neutral}, " +
          f"Negative {document.confidence_scores.negative}")

    for sentence in document.sentences:
        print(f"Sentence sentiment: {sentence.sentiment}")
        print(f"Positive {sentence.confidence_scores.positive}, " +
              f"Neutral {sentence.confidence_scores.neutral}, " +
              f"Negative {sentence.confidence_scores.negative}")

        for opinion in sentence.mined_opinions:
            target = opinion.target
```

```
            print(f"Target '{target.text}': {sentence.sentiment}")
            print(f"Positive {target.confidence_scores.positive}, " +
                  f"Neutral {target.confidence_scores.neutral}, " +
                  f"Negative {target.confidence_scores.negative}")

            for assessment in opinion.assessments:
                print(f"Assessment '{assessment.text}': {assessment.sentiment}")
                print(f"Positive {assessment.confidence_scores.positive}, " +
                      f"Neutral {assessment.confidence_scores.neutral}, " +
                      f"Negative {assessment.confidence_scores.negative}")
        print()
```

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Custom text Classification

```
# pip install azure-ai-textanalytics==5.3.0
from azure.ai.textanalytics import TextAnalyticsClient, TextDocumentInput
from azure.core.credentials import AzureKeyCredential

key = ""
endpoint = ""
projectname = "test"
deploymentname = "azurefoodtraveldeployment"

client = TextAnalyticsClient(endpoint=endpoint, credential=AzureKeyCredential(key))

context = """
Solo Travel:

Solo travel is a growing trend where individuals explore destinations on their own terms,
offering a unique opportunity for personal growth and self-discovery.
Traveling alone allows for a flexible itinerary, encouraging travelers to step out of their comfort zones,
meet new people, and immerse themselves in new cultures at their own pace. Solo adventurers often find that
their journeys are not just about the places they visit but also about the introspective journey and
the sense of independence and confidence gained along the way. Whether it's navigating the bustling streets of a foreign
city,
finding solace in the tranquility of a secluded beach, or joining a group tour to meet like-minded travelers,
solo travel is a rewarding experience that caters to a wide range of interests and personal growth opportunities.
"""

documents = [TextDocumentInput(id="1", text=context)]

operation = client.begin_single_label_classify(documents, project_name=projectname, deployment_name=deploymentname);
```

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```
response = operation.result()

for docresult in response:
        for result in docresult.classifications:
                print(f"Classification: {result.category} ({result.confidence_score})")
```

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Named Entity Recognition (NER) – custom

```
# pip install azure-ai-textanalytics==5.3.0
from azure.ai.textanalytics import TextAnalyticsClient, TextDocumentInput
from azure.core.credentials import AzureKeyCredential

key = ""
endpoint = ""
projectname = ""
deploymentname = ""

client = TextAnalyticsClient(endpoint=endpoint, credential=AzureKeyCredential(key))

context = """
She is dealing with slow performance issues in the procurement department when using her
Toshiba Satellite running Windows 8.1.
Rachel Adams especially finds problems when using the inventory management system,
which is critical for tracking orders and supplies.
"""

documents = [TextDocumentInput(id="1", text=context)]

operation = client.begin_recognize_custom_entities(documents, project_name=projectname, deployment_name=deploymentname);

response = operation.result()

for docresult in response:
        for result in docresult.entities:
                print(f"{result.category}: {result.text} ({result.confidence_score})")
```

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```
# single line comment
'''
a
multi
line
comment
'''

"""
as
well
"""
```