REFLECTION

1. Write a brief reflection on your experience using Azure Text Analytics for text analysis.

I personally liked using Azure Text Analytics because it gave me broad exposure to Natural Language Processing. In this exercise, I was able to test my national language through the Language Processing feature, which generated the right output. The screenshot below shows the output is in the Indonesian language. I also tried various languages, and it detected the exact language.

```
[5]: from azure.core.credentials import AzureKeyCredential
     from azure.ai.textanalytics import TextAnalyticsClient

     cognitive_key = '70de79517541482993a5959ac9fc434f'
     cognitive_endpoint = 'https://textanalyticshy.cognitiveservices.azure.com/'

     credential = AzureKeyCredential(cognitive_key)
     text_analytics_client = TextAnalyticsClient(endpoint=cognitive_endpoint, credential=credential)

     documents = [
     "Berakit-rakit ke hulu, berenang-renang ke tepian. Bersakit-sakit dahulu, bersenang-senang kemudian."
     ]

     language_analysis = text_analytics_client.detect_language(documents)

     result = [doc for doc in language_analysis if not doc.is_error]

     bright_red = '\033[91m'
     dark_blue = '\033[34m'
     dark_green = '\033[32m'
     reset = '\033[0m'

     for doc in result:
         print(f"{bright_red}Language detected:{reset} {doc.primary_language.name}")
         print(f"{dark_blue}ISO6391 name:{reset} {doc.primary_language.iso6391_name}")
         print(f"{dark_green}Confidence score:{reset} {doc.primary_language.confidence_score}\n")

     Language detected: Indonesian
     ISO6391 name: id
     Confidence score: 1.0
```

Screenshot 1: A screenshot of a code containing foreign language text and its output.

Furthermore, I tried to challenge the Sentiment Analysis tool to see if it could detect a neutral statement. Previously, I only thought that AI has the ability to detect if a sentence is positive or negative only. With this exercise, I was overwhelmed with its capabilities in handling complex quotes. According to the screenshot below, the tool eventually detected the statement being a Neutral one.

```
[4]: from azure.core.credentials import AzureKeyCredential
from azure.ai.textanalytics import TextAnalyticsClient

cognitive_key = '70de79517541482993a5959ac9fc434f'
cognitive_endpoint = 'https://textanalyticshy.cognitiveservices.azure.com/'

credential = AzureKeyCredential(cognitive_key)
text_analytics_client = TextAnalyticsClient(endpoint=cognitive_endpoint, credential=credential)

text_analytics_client = TextAnalyticsClient(endpoint=cognitive_endpoint, credential=credential)

documents = [
"The conference will begin at 9 AM tomorrow."
]

response = text_analytics_client.analyze_sentiment(documents, language="en")
result = [doc for doc in response if not doc.is_error]

for doc in result:
    print("Overall sentiment: {}".format(doc.sentiment))
    print("Scores: positive={}; neutral={}; negative={} \n".format(
        doc.confidence_scores.positive,
        doc.confidence_scores.neutral,
        doc.confidence_scores.negative,
    ))

Overall sentiment: neutral
Scores: positive=0.0; neutral=1.0; negative=0.0
```

Screenshot 2: A screenshot of a code containing a neutral statement and its output.

2. What did you find interesting or challenging about the tool?

Interesting

I found out that the whole Azure Cognitive Services is really fascinating. Besides doing the requirements of the exercise, where we did language detection, sentiment analysis, key phrase extraction and entity recognition, I also checked out the Speech feature. I liked the speaker recognition tool as it managed to detect voices that belonged to a particular person. Its Speech to Text tool and Text to Speech tool were also great tools for me as I create audio content for voice overs.

Another thing I found interesting with this tool is that it is very user-friendly and accessible for a beginner to use. The coding also didn't seem to be very technical, which made me easily understand the purpose of each code line.

Challenges

One challenge I faced was trying to bold a styled text. For instance, I could only change the font colour of a text or bold it. I was unable to do both when generating the output as per the screenshot below. Even after implementing a code derived from ChatGPT, I was unable to obtain the desired output format. Despite having the necessary codes to run a bold formatted statement, I was unable to achieve it. I am still working on how to accomplish what I wanted.

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

cognitive_key = '70de79517541482993a5959ac9fc434f'
cognitive_endpoint = 'https://textanalyticshy.cognitiveservices.azure.com/'

credential = AzureKeyCredential(cognitive_key)
text_analytics_client = TextAnalyticsClient(endpoint=cognitive_endpoint, credential=credential)

documents = [
    "Hola, ¿cómo estás?"
]

language_analysis = text_analytics_client.detect_language(documents)

result = [doc for doc in language_analysis if not doc.is_error]

bright_red = '\033[91m'
dark_blue = '\033[34m'
dark_green = '\033[32m'
bold = '\033[1m'
reset = '\033[0m'

for doc in result:
    print(f"{bold}Language detected:{reset} {doc.primary_language.name}")
    print(f"{bold}ISO6391 name:{reset} {doc.primary_language.iso6391_name}")
    print(f"{bold}Confidence score:{reset} {doc.primary_language.confidence_score}\n")
```

```
Language detected: Spanish
ISO6391 name: es
Confidence score: 1.0
```

Screenshot 3: A screenshot of a code and its output.

I did not encounter any major challenges in this activity besides trying to ensure that I did not spend too much money on this. I've had the $100 in my initial student account depleted as I tried exploring a few features of Azure without noticing that I had multiple computes running.

3. How might you use it in your applications?

Back home, one of my family businesses is retail grocery stores. We do receive many customer reviews online as well as through messages. I can use Sentiment Analysis to understand the sentiment (positive, negative, neutral) of customer reviews and feedback. This helps in quickly identifying areas where improvements is needed and which elements of the business that our customers are happy or dissatisfied.

Moreover, I could also use Key Phrase Extraction which will assist us in extracting key phrases from customer reviews to understand the main topics or issues customers are talking about. This can help in identifying trends and common concerns.

Finally, I would also like to use the Entity Recognition tool to assist me in demand forecasting. This tool will provide me with valuable insights into customer preferences and product popularity trends that can be extracted through customer feedback, reviews, or other textual data related to products. This approach will also enable me to make more informed decisions regarding inventory management, marketing strategies, and overall business operations.

I would also like to summarise methods of how a similar retail giant, Walmart, uses NLP in its business operations. Walmart Voice Order and Text to Shop enable customers to add items to their carts and schedule deliveries via voice commands and text messages. These systems use natural language processing (NLP) and understanding (NLU) to process requests, recognize product names, and personalize responses based on prior purchases (Ainoa, 2023).

Besides that, Walmart's chatbots can handle millions of customer inquiries about orders, returns, and more, reducing the need for human intervention and allowing agents to focus on complex issues. The chatbots support multiple languages and localized contexts, enhancing customer satisfaction across countries like the U.S., Canada, Mexico, Chile, and India (Bhatt, 2022).

References.

Ainoa, C. (2023, May 3). *Three ways we're using conversational AI at walmart*. Three ways we're using conversational AI at Walmart. https://tech.walmart.com/content/walmart-global-tech/en_us/blog/post/three-ways-we-are-using-conversational-ai-at-walmart.html

Bhatt, P. (2022, April 7). *AI for customer care– building smart conversational assistants*. Medium. https://medium.com/walmartglobaltech/ai-for-customer-care-building-smart-conversational-assistants-f0f527169bbb