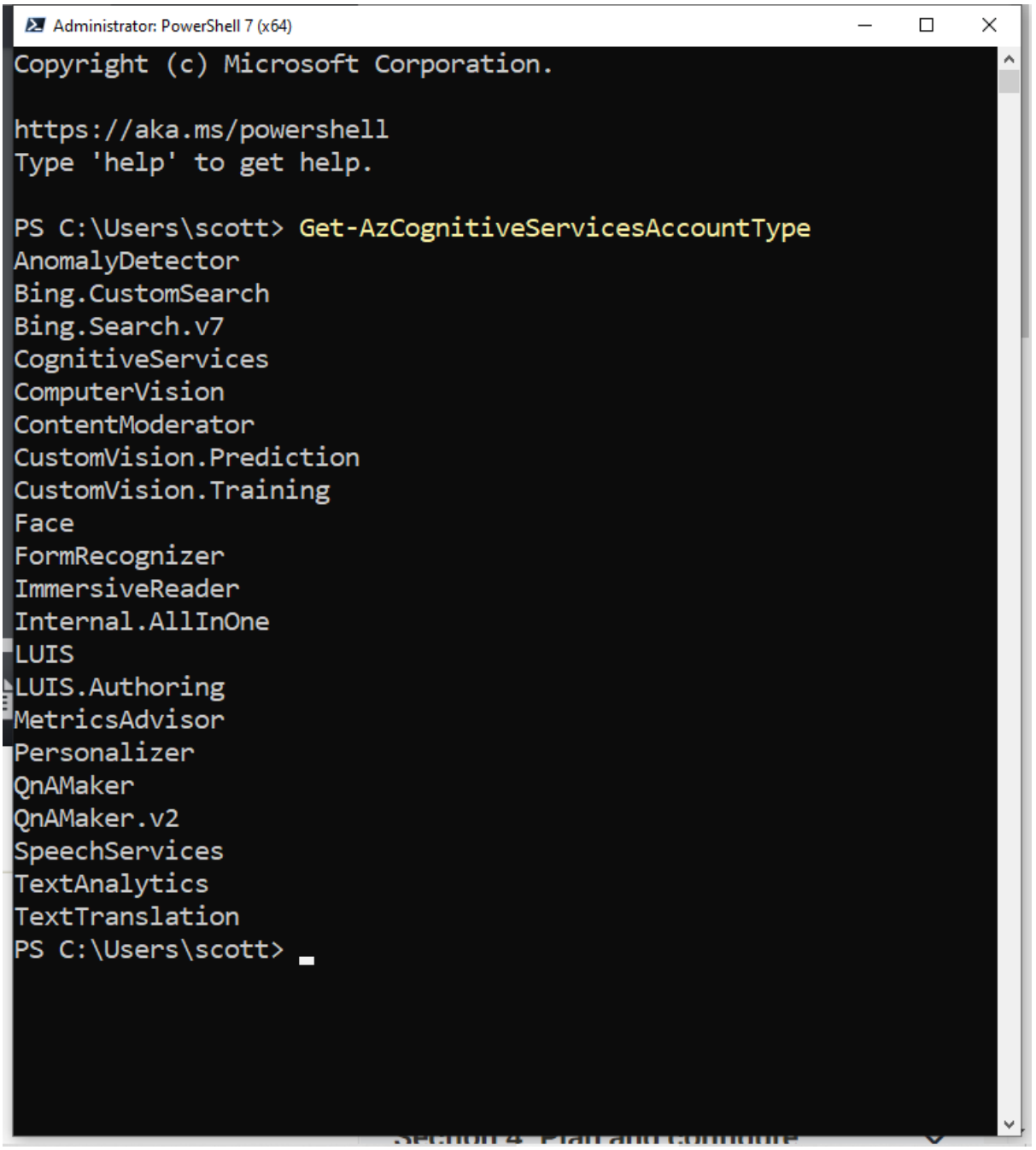
AI-102 - PowerShell, CLI, Python and C# SDK

List Cognitive Services Types

PowerShell:

```
Get-AzCognitiveServicesAccountType
```



Create an Azure Cognitive Services Account

CLI:

```
az cognitiveservices account create \
    --kind ComputerVision \
    --name ComputerVisionService \
    --sku S1 \
    --resource-group newrgname \
    --location westus
```

PowerShell:

```
New-AzCognitiveServicesAccount
    -ResourceGroupName newrgname
    -name ComputerVisionService
    -Type ComputerVision
    -SkuName S0
    -Location 'WestUS'
```

Computer Vision API

Computer Vision Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-vision-computervision/azure.cognitiveservices.vision.computervision.operations.computervisionclientoperationsmixin?view=azure-python

NOTE: There are also methods that end in "**_in_stream**" which means that you provide the image binary in the body of the request

METHODS
analyze_image - extracts features from the image, which you can specify; image provided by URL

analyze_image_by_domain - uses a specific domain to analyze an image; image provided by URL

describe_image - a description of the image in human-readable language; image provided by URL

detect_objects - detects objects it can recognize in the image, with locations; image provided by URL

generate_thumbnail - generates a thumbnail of specific width and height, based on the region of interest; uses smart cropping; image provided by URL

get_area_of_interest - a bounding box of the most important area of the image; image provided by URL

get_read_result - get the results of the read() method below

list_models - get subject domain list

read - uses OCR to find text in the image, including location; image provided by URL

recognize_printed_text - uses OCR to find text in the image, including location; image provided by URL

tag_image - generate a list of words from the image; image provided by URL

Computer Vision C# SDK:

https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.cognitiveservices.vision.computervision.computervisionclient?view=azure-dotnet

NOTE: There are also methods that end in "**InStreamAsync**" which means that you provide the image binary in the body of the request

METHODS
AnalyzeImageAsync - extracts features from the image, which you can specify; image provided by URL

AnalyzeImageByDomainAsync - uses a specific domain to analyze an image; image provided by URL

DescribeImageAsync - a description of the image in human-readable language; image provided by URL

DetectObjectsAsync - detects objects it can recognize in the image, with locations; image provided by URL

GenerateThumbnailAsync - generates a thumbnail of specific width and height, based on the region of interest; uses smart cropping; image provided by URL

GetAreaOfInterestAsync - a bounding box of the most important area of the image; image provided by URL

GetReadResultAsync - get the results of the read() method below

ListModelsAsync - get subject domain list

ReadAsync - uses OCR to find text in the image, including location; image provided by URL

RecognizePrintedTextAsync - uses OCR to find text in the image, including location; image provided by URL

TagImageAsync - generate a list of words from the image; image provided by URL

Custom Vision API - Prediction Classification

Custom Vision Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-vision-customvision/azure.cognitiveservices.vision.customvision.prediction.operations.customvisionpredictionclientoperationsmixin?view=azure-python

NOTE: There are also methods that end in "**_with_no_store**" which does not save the result

METHODS

classify_image
Classify an image and saves the result.

classify_image_url
Classify an image URL and saves the result.

detect_image
Detect objects in an image and saves the result.

detect_image_url
Detect objects in an image URL and saves the result.

Custom Vision C# SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-vision-customvision/azure.cognitiveservices.vision.customvision.prediction.operations.customvisionpredictionclientoperationsmixin?view=azure-python

NOTE: There are also methods that end in "**_with_no_store**" which does not save the result

METHODS
classify_image
Classify an image and saves the result.

classify_image_url
Classify an image URL and saves the result.

detect_image
Detect objects in an image and saves the result.

detect_image_url
Detect objects in an image URL and saves the result.

Custom Vision API - Training

Custom Vision Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-vision-customvision/azure.cognitiveservices.vision.customvision.training.operations.customvisiontrainingclientoperationsmixin?view=azure-python

METHODS

create_image_regions
Create a set of image regions.

create_image_tags
Associate a set of images with a set of tags.

create_images_from_data
Add the provided images to the set of training images.

create_images_from_files
Add the provided batch of images to the set of training images.

create_images_from_predictions
Add the specified predicted images to the set of training images.

create_images_from_urls
Add the provided image URLs to the set of training images.

create_project
Create a project.

create_tag
Create a tag for the project.

delete_image_regions
Delete a set of image regions.

delete_image_tags
Remove a set of tags from a set of images.

delete_images
Delete images from the set of training images.

delete_iteration
Delete a specific iteration of a project.

delete_prediction
Delete a set of predicted images and their associated prediction results.

delete_project
Delete a specific project.

delete_tag
Delete a tag from the project.

export_iteration
Export a trained iteration.

export_project
Exports a project.

get_artifact
Get artifact content from blob storage, based on artifact relative path in the blob.

get_domain
Get information about a specific domain.

get_domains
Get a list of the available domains.

get_exports
Get the list of exports for a specific iteration.

get_image_count
Get the number of images.

get_image_performance_count
Gets the number of images tagged with the provided {tagIds} that have prediction results from training for the provided iteration {iterationId}.

get_image_performances
Get an image with its prediction for a given project iteration.

get_image_region_proposals
Get region proposals for an image. Returns empty array if no proposals are found.

get_images
Get images for a given project iteration or workspace.

get_images_by_ids
Get images by id for a given project iteration.

get_iteration
Get a specific iteration.

get_iteration_performance

Get detailed performance information about an iteration.

get_iterations
Get iterations for the project.

get_project
Get a specific project.

get_projects
Get your projects.

get_tag
Get information about a specific tag.

get_tagged_image_count
Gets the number of images tagged with the provided {tagIds}.

get_tagged_images
Get tagged images for a given project iteration.

get_tags
Get the tags for a given project and iteration.

get_untagged_image_count
Gets the number of untagged images.

get_untagged_images
Get untagged images for a given project iteration.

import_project
Imports a project.

publish_iteration
Publish a specific iteration.

query_predictions
Get images that were sent to your prediction endpoint.

query_suggested_image_count
Get a count of images whose suggested tags match given tags and their probabilities are greater than or equal to the given threshold. Returns count as 0 if none found.

query_suggested_images
Get untagged images whose suggested tags match given tags. Returns empty array if no images are found.

quick_test_image
Quickly test an image.

quick_test_image_url
Quick test an image URL.

suggest_tags_and_regions
Suggest tags and regions for an array/batch of untagged images. Returns empty array if no tags are found.

train_project
Queues project for training.

unpublish_iteration
Unpublish a specific iteration.

update_image_metadata
Update metadata of images.

update_iteration
Update a specific iteration.

update_project
Update a specific project.

update_tag
Update a tag.

Custom Vision C# SDK:

https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.cognitiveservices.vision.customvision.training.customvisiontrainingclientextensions?view=azure-dotnet

METHODS

CreateImageRegions
Create a set of image regions.

CreateImageTags
Associate a set of images with a set of tags.

CreateImagesFromData
Add the provided images to the set of training images.

CreateImagesFromFiles
Add the provided batch of images to the set of training images.

CreateImagesFromPredictions
Add the specified predicted images to the set of training images.

CreateImagesFromUrls
Add the provided image URLs to the set of training images.

CreateProject
Create a project.

CreateTag
Create a tag for the project.

DeleteImageRegions
Delete a set of image regions.

DeleteImageTags
Remove a set of tags from a set of images.

DeleteImages
Delete images from the set of training images.

DeleteIteration
Delete a specific iteration of a project.

DeletePrediction
Delete a set of predicted images and their associated prediction results.

DeleteProject
Delete a specific project.

DeleteTag
Delete a tag from the project.

ExportIteration
Export a trained iteration.

ExportProject
Exports a project.

GetArtifact
Get artifact content from blob storage, based on artifact relative path in the blob.

GetDomain
Get information about a specific domain.

GetDomains
Get a list of the available domains.

GetExports
Get the list of exports for a specific iteration.

GetImageCount
Get the number of images.

GetImagePerformanceCount
Gets the number of images tagged with the provided {tagIds} that have prediction results from training for the provided iteration {iterationId}.

GetImagePerformances
Get an image with its prediction for a given project iteration.

GetImageRegionProposals
Get region proposals for an image. Returns empty array if no proposals are found.

GetImages
Get images for a given project iteration or workspace.

GetImagesByIds
Get images by id for a given project iteration.

GetIteration
Get a specific iteration.

GetIterationPerformance
Get detailed performance information about an iteration.

GetIterations
Get iterations for the project.

GetProject
Get a specific project.

GetProjects
Get your projects.

GetTag
Get information about a specific tag.

GetTaggedImageCount
Gets the number of images tagged with the provided {tagIds}.

GetTaggedImages
Get tagged images for a given project iteration.

GetTags
Get the tags for a given project and iteration.

GetUntaggedImageCount
Gets the number of untagged images.

GetUntaggedImages
Get untagged images for a given project iteration.

ImportProject
Imports a project.

PublishIteration
Publish a specific iteration.

QueryPredictions
Get images that were sent to your prediction endpoint.

QuerySuggestedImageCount
Get a count of images whose suggested tags match given tags and their probabilities are greater than or equal to the given threshold. Returns count as 0 if none found.

QuerySuggestedImages
Get untagged images whose suggested tags match given tags. Returns empty array if no images are found.

QuickTestImage
Quickly test an image.

QuickTestImageUrl
Quick test an image URL.

SuggestTagsAndRegions
Suggest tags and regions for an array/batch of untagged images. Returns empty array if no tags are found.

TrainProject
Queues project for training.

UnpublishIteration
Unpublish a specific iteration.

UpdateImageMetadata
Update metadata of images.

UpdateImageMetadata
Update a specific iteration.

UpdateProject
Update a specific project.

UpdateTag
Update a tag.

Text Analytics API

Text Analytics Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-ai-textanalytics/azure.ai.textanalytics?view=azure-python

METHODS

analyze_sentiment
Analyze sentiment for a batch of documents.

detect_language
Detect language for a batch of documents.

extract_key_phrases
Extract key phrases from a batch of documents.

recognize_entities
Recognize entities for a batch of documents.

recognize_linked_entities
Recognize linked entities from a well-known knowledge base for a batch of documents.

Text Analytics C# SDK:

https://docs.microsoft.com/en-us/dotnet/api/azure.ai.textanalytics.textanalyticsclient?view=azure-dotnet

NOTE: There are also methods that end in "**Async**" that operate asynchronously, methods that end in "**Batch**" that operate on a batch, and methods that end in "**BatchAsync**" that operate asynchronously on a batch.

METHODS

DetectLanguage(String, String, CancellationToken)
Runs a predictive model to determine the language the passed-in document is written in, and returns the detected language as well as a score indicating the model's confidence that the inferred language is correct. Scores close to 1 indicate high certainty in the result.

ExtractKeyPhrases(String, String, CancellationToken)
Runs a model to identify a collection of significant phrases found in the passed-in document.

RecognizeEntities(String, String, CancellationToken)
Runs a predictive model to identify a collection of named entities in the passed-in document, and categorize those entities into types such as person, location, or organization.

RecognizeLinkedEntities(String, String, CancellationToken)
Runs a predictive model to identify a collection of entities found in the passed-in document, and include information linking the entities to their corresponding entries in a well-known knowledge base.

Speech API

Speech Recognizer Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-speech/azure.cognitiveservices.speech.recognizer?view=azure-python

METHODS

recognize_once

Performs recognition in a blocking (synchronous) mode. Returns after a single utterance is recognized. The end of a single utterance is determined by listening for silence at the end or until a maximum of 15 seconds of audio is processed. The task returns the recognition text as result. For long-running multi-utterance recognition, use start_continuous_recognition_async instead.

start_continuous_recognition

Synchronously initiates continuous recognition operation. User has to connect to EventSignal to receive recognition results. Call stop_continuous_recognition_async to stop the recognition.

start_keyword_recognition

Synchronously configures the recognizer with the given keyword model. After calling this method, the recognizer is listening for the keyword to start the recognition. Call stop_keyword_recognition() to end the keyword initiated recognition.

stop_continuous_recognition

Synchronously terminates ongoing continuous recognition operation.

stop_keyword_recognition

Synchronously ends the keyword-initiated recognition.

Speech Recognizer C# SDK:

https://docs.microsoft.com/en-us/dotnet/api/microsoft.cognitiveservices.speech.speechrecognizer?view=azure-dotnet#methods

StartContinuousRecognitionAsync()
Starts speech recognition on a continuous audio stream as an asynchronous operation, until StopContinuousRecognitionAsync() is called. You must subscribe to events to receive recognition results.

StartKeywordRecognitionAsync(KeywordRecognitionModel)
Configures the recognizer with the given keyword model. After calling this method, the recognizer is listening for the keyword to start the recognition. Call StopKeywordRecognitionAsync() to end the keyword initiated recognition. You must subscribe to events to receive recognition results.

StopContinuousRecognitionAsync()
Stops a running recognition operation as soon as possible and immediately requests a result based on the the input that has been processed so far. This works for all recognition operations, not just continuous ones, and facilitates the use of push-to-talk or "finish now" buttons for manual audio endpointing.

StopKeywordRecognitionAsync()
Ends the keyword initiated recognition.

Speech Synthesizer Python SDK:

https://docs.microsoft.com/en-us/python/api/azure-cognitiveservices-speech/azure.cognitiveservices.speech.speechsynthesizer?view=azure-python

METHODS

get_voices_async
Get the available voices, asynchronously.

speak_ssml
Performs synthesis on ssml in a blocking (synchronous) mode.

speak_text
Performs synthesis on plain text in a blocking (synchronous) mode.

start_speaking_ssml
Starts synthesis on ssml in a blocking (synchronous) mode.

start_speaking_text
Starts synthesis on plain text in a blocking (synchronous) mode.

stop_speaking
Synchronously terminates ongoing synthesis operation. This method will stop playback and clear unread data in PullAudioOutputStream.

Speech Synthesizer Python SDK:

https://docs.microsoft.com/en-us/dotnet/api/microsoft.cognitiveservices.speech.speechsynthesizer?view=azure-dotnet

METHODS:

GetVoicesAsync(String)
Get the available voices. Added in 1.16.0

SpeakSsmlAsync(String)
Synthesize speech from SSML synchronously (returns when done synthesizing).

SpeakTextAsync(String)
Synthesize speech from plain text synchronously (returns when done synthesizing).

StartSpeakingSsmlAsync(String)
Queue speech synthesis task from SSML as an asynchronous operation.

StartSpeakingTextAsync(String)
Queue speech synthesis task from plain text as an asynchronous operation.

StopSpeakingAsync()
Stop speech synthesis.