



Playing with Cognitive Services and Power BI

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- MVP Data Platform
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Agenda

- Azure AI Services
- Text Analysis
 - Language detection
 - Sentiment analysis
 - Key phrase extraction
- Vision
 - Image tagging
 - Image caption

Disclaimer:

Cognitive Services has been encapsulated into Azure AI services

ⓘ Note

As of July 2023, Azure AI services encompass all of what were previously known as Cognitive Services and Azure Applied AI Services. There are no changes to pricing. The names *Cognitive Services* and *Azure Applied AI* continue to be used in Azure billing, cost analysis, price list, and price APIs. There are no breaking changes to application programming interfaces (APIs) or SDKs.

<https://learn.microsoft.com/en-us/azure/ai-services/language-service/overview>




















Azure AI Services

Azure AI services is a comprehensive suite of out-of-the-box and customizable AI tools, APIs, and models that help modernize your business processes faster.

Create intelligent tools and applications using large language models and deliver innovative solutions that automate document processing, improve customer service, understand the root cause of anomalies, extract insights from content, and more.

<https://azure.microsoft.com/en-us/products/ai-services>

Available Azure AI Services

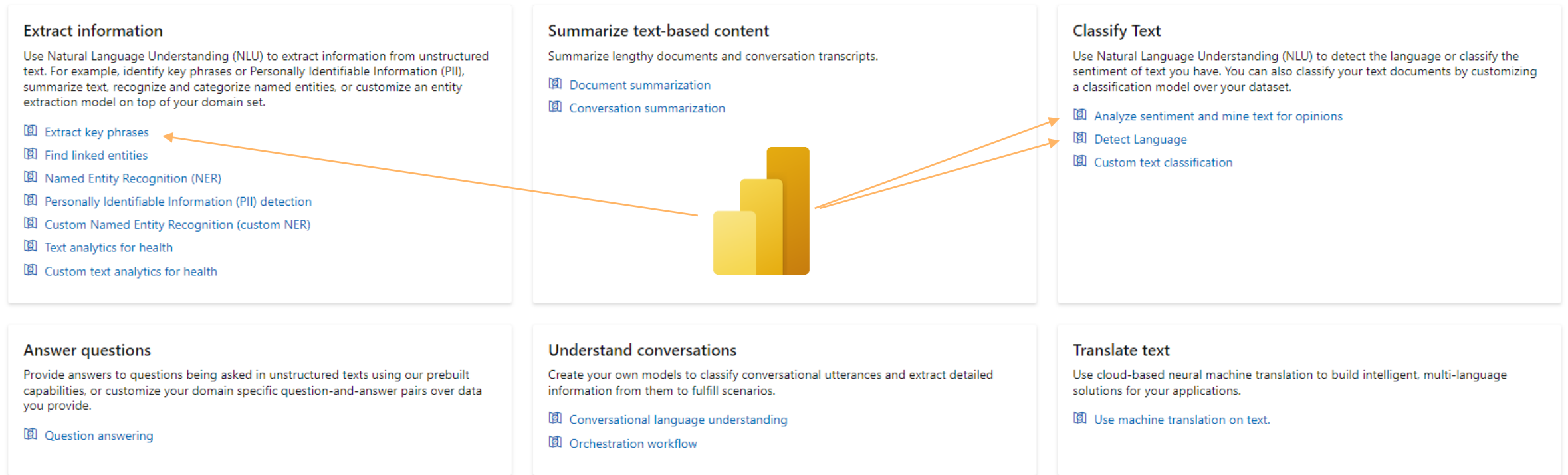
Service	Description
 Anomaly Detector (retired)	Identify potential problems early on
 Azure AI Search	Bring AI-powered cloud search to your mobile and web apps
 Azure OpenAI	Perform a wide variety of natural language tasks
 Bot Service	Create bots and connect them across channels
 Content Moderator (retired)	Detect potentially offensive or unwanted content
 Content Safety	An AI service that detects unwanted contents
 Custom Vision	Customize image recognition to fit your business
 Document Intelligence	Turn documents into usable data at a fraction of the time and cost
 Face	Detect and identify people and emotions in images
 Immersive Reader	Help users read and comprehend text
 Language	Build apps with industry-leading natural language understanding capabilities
 Language understanding (retired)	Understand natural language in your apps
 Metrics Advisor (retired)	An AI service that detects unwanted contents
 Personalizer (retired)	Create rich, personalized experiences for each user
 QnA maker (retired)	Distill information into easy-to-navigate questions and answers
 Speech	Speech to text, text to speech, translation and speaker recognition
 Translator	Translate more than 100 languages and dialects
 Video Indexer	Extract actionable insights from your videos
 Vision	Analyze content in images and videos



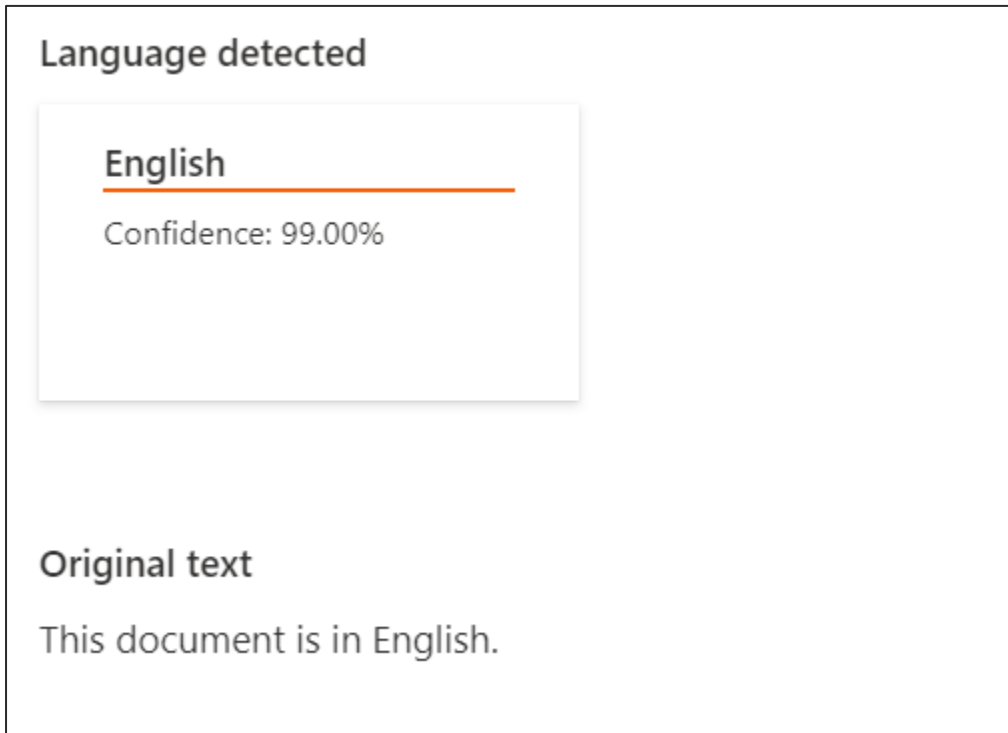
<https://learn.microsoft.com/en-us/azure/ai-services/what-are-ai-services>

Azure AI Language

Azure AI Language is a cloud-based service that provides Natural Language Processing (NLP) features for understanding and analyzing text.



Language detection



Language detection is a preconfigured feature that can detect the language a document is written in and returns a language code for a wide range of languages, variants, dialects, and some regional/cultural languages.

The score value is between 0 and 1.

<https://learn.microsoft.com/en-us/azure/ai-services/language-service/overview>

Language Studio > Detect Language

[Language Studio](#) > Detect language tryout

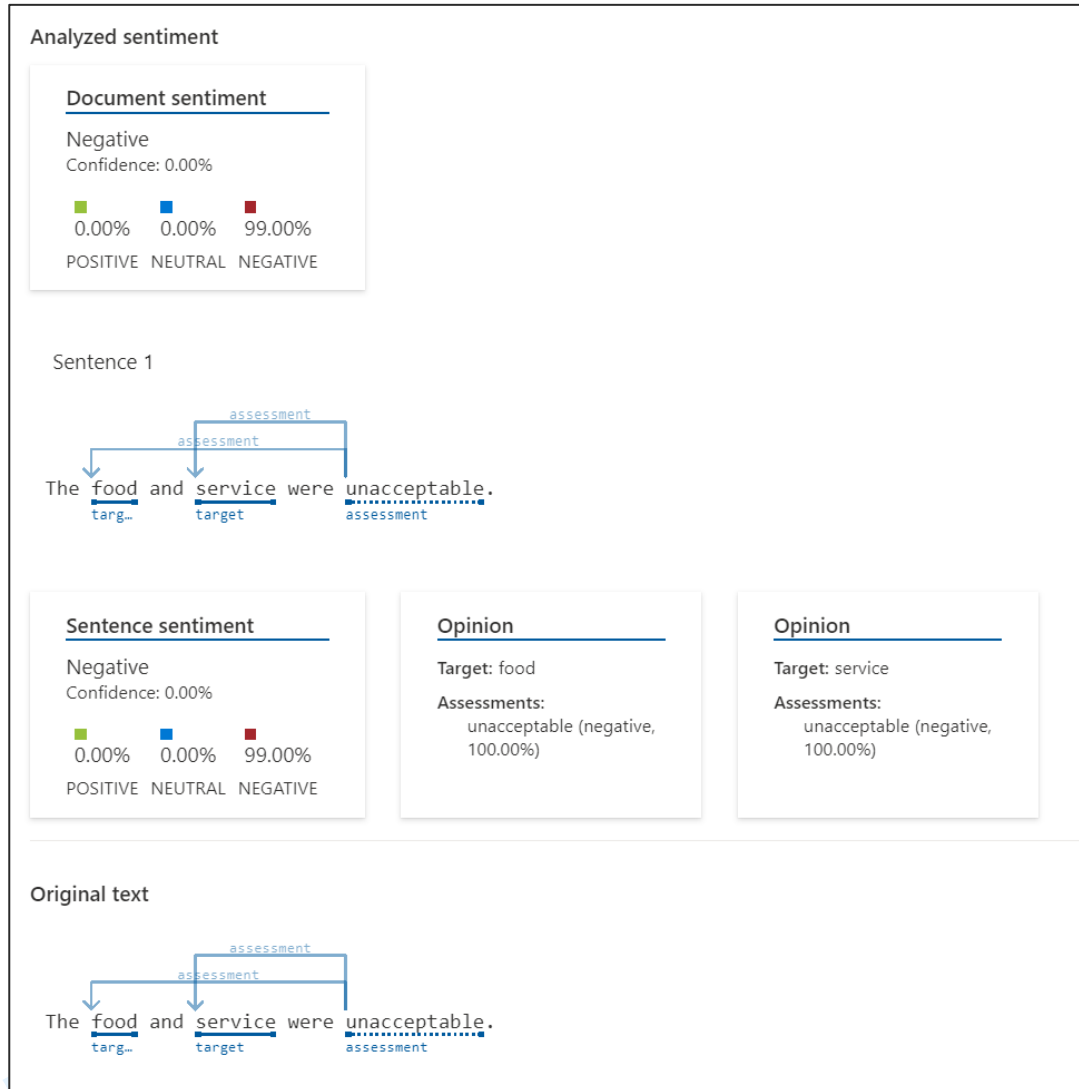
Detect language

Version 2022-05-01

The Language Detection feature of the Azure Text Analytics REST API evaluates text input for each document and returns language identifiers with a score that indicates the strength of the analysis. This capability is useful for content stores that collect arbitrary text, where language is unknown. You can parse the results of this analysis to determine which language is used in the input document. The response also returns a score that reflects the confidence of the model. The score value is between 0 and 1. [Learn more](#)

<https://language.cognitive.azure.com/tryout/detectLanguage>

Sentiment Analysis



Sentiment analysis and opinion mining are preconfigured features that help you find out what people think of your brand or topic by mining text for clues about positive or negative sentiment, and can associate them with specific aspects of the text

<https://learn.microsoft.com/en-us/azure/ai-services/language-service/overview>

Language Studio > Analyze sentiment and opinions

[Language Studio](#) > Sentiment and opinion mining tryout

Analyze sentiment and opinions

Version 2022-05-01

The Text Analytics API's Sentiment Analysis feature provides sentiment labels (such as "negative", "neutral" and "positive") and confidence scores at the sentence and document-level. You can also send Opinion Mining requests using the Sentiment Analysis endpoint, which provides granular information about the opinions related to words (such as the attributes of products or services) in the text. [Learn more](#)

<https://language.cognitive.azure.com/tryout/sentiment>

Key phrase extraction

Key phrases

Pike place market, favorite Seattle attraction

Original text

Pike place market is my favorite Seattle attraction.

Key phrase

Key phrase

Key phrase extraction is a preconfigured feature that evaluates and returns the main concepts in unstructured text, and returns them as a list.

Language Studio > Extract key phrases

[Language Studio](#) > Key phrases tryout

Extract key phrases

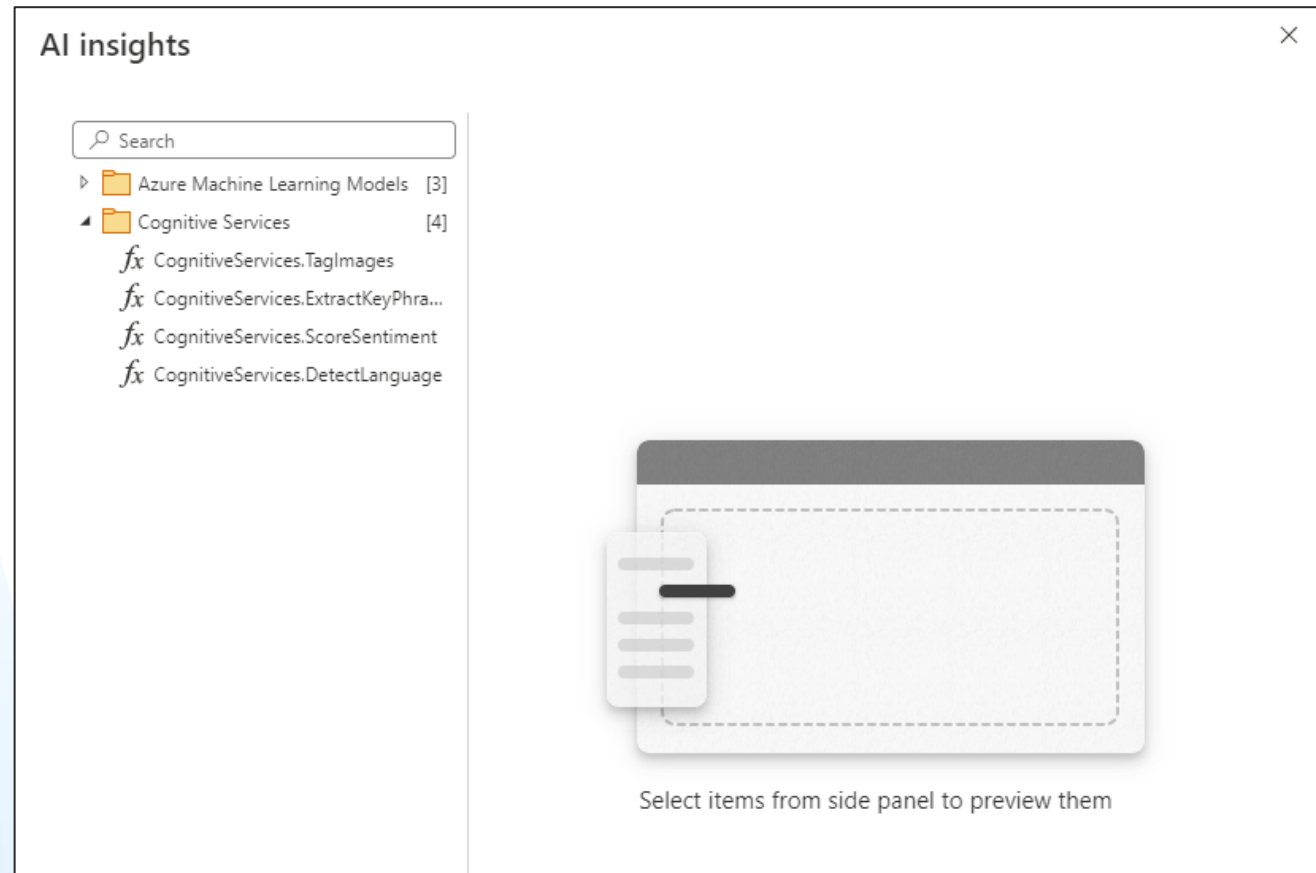
Version 2022-05-01

The Key Phrase Extraction API evaluates unstructured text, and for each JSON document, returns a list of key phrases. This capability is useful if you need to quickly identify the main points from your text. [Learn more](#)

<https://language.cognitive.azure.com/tryout/keyPhrases>

AI services and Power BI

AI insights directly available in Dataflows.  Premium feature



AI services and Power BI

Reviews from Airbnb for Copenhagen – <http://insideairbnb.com/get-the-data/>

Copenhagen, Hovedstaden, Denmark

Explore the [Copenhagen](#) data.

Date Compiled	Country/City	File Name	Description
29 December, 2022	Copenhagen	listings.csv.gz	Detailed Listings data
29 December, 2022	Copenhagen	calendar.csv.gz	Detailed Calendar Data
29 December, 2022	Copenhagen	reviews.csv.gz	Detailed Review Data
29 December, 2022	Copenhagen	listings.csv	Summary information and metrics for listings in Copenhagen (good for visualisations).
29 December, 2022	Copenhagen	reviews.csv	Summary Review data and Listing ID (to facilitate time based analytics and visualisations linked to a listing).
N/A	Copenhagen	neighbourhoods.csv	Neighbourhood list for geo filter. Sourced from city or open source GIS files.
N/A	Copenhagen	neighbourhoods.geojson	GeoJSON file of neighbourhoods of the city.

AI language - Demo

Power BI Premium

- Dataflows + AI
 - Extract Key Phrases
 - Score Sentiment
 - Detect Language
- Power BI Desktop > Built-in Text Analytics features
 - Extract Key Phrases
 - Score Sentiment
 - Detect Language

Azure Text Analytics – no Premium

What do you need:

- An Azure subscription
- a registered resource under the language service in Cognitive Services
- Endpoint and API provided by the service

Tutorial: <https://learn.microsoft.com/en-us/azure/ai-services/language-service/keyphrase-extraction/tutorials/integrate-power-bi>

Azure Text Analytics – no Premium

Create a new resource directly in the Azure portal

All services >

Azure AI services ...

Azure AI services

Search

Overview

All Azure AI services

Azure AI services

Azure AI services

Azure OpenAI

AI Search

Computer vision

Face API

Custom vision

Speech service

Language service

Translator

Document intelligence

Bot services

Anomaly detector

Content moderator





















Health Insights

Personalizer

Metrics advisor

Build smarter apps and services

Azure AI services brings AI within reach of every developer—without requiring machine-learning expertise. All it takes is an API call to embed the ability to see, hear, speak, search, understand, and accelerate decision-making into your apps. [Learn more](#)

 Azure OpenAI account Perform a wide variety of natural language tasks. + Create View	 AI Search Bring AI-powered cloud search to your mobile and web apps. + Create View	 Computer vision Analyze content in images and videos. Learn more + Create View	 Face API Detect and identify people and emotions in images. Learn more + Create View	 Custom vision Customize image recognition to fit your business. Learn more + Create View	 Speech service Speech to text, text to speech, translation and speaker recognition. Learn more + Create View	 Language Service Build apps with industry-leading natural language understanding capabilities. Learn more + Create View
 Translator Translate more than 100 languages and dialects. Learn more + Create View	 Document intelligence Turn documents into usable data at a fraction of the time and cost. + Create View	 Bot services Create bots and connect them across channels. + Create View	 Anomaly detector Identify potential problems early on. Learn more + Create View	 Content moderator Detect potentially offensive or unwanted content. Learn more + Create View	 Health Insights Health Insights + Create View	 Personalizer Create rich, personalized experiences for each user. Learn more + Create View
 Metrics advisor Proactively monitor metrics and diagnose issues. + Create View	 Immersive reader Help users read and comprehend text. + Create View	 Azure AI services multi-service account Add multiple Azure AI services to your application. + Create View	 Content safety An AI service that detects unwanted contents. Learn more + Create View	 Language understanding (classic) Understand natural language in your apps. Learn more + Create View	 QnA maker (classic) Distill information into easy-to-navigate questions and answers. Learn more + Create View	

Azure Text Analytics – no Premium

Be aware of the pricing tier!

Create

Text Analytics

Name *

Subscription *

Location *

Pricing tier ([View full pricing details](#)) *

Resource group *

[Create new](#)

Azure Text Analytics – no Premium

Get API key and endpoint

All services > Azure AI services | Language service > AMTTextAnalytics

AMTTextAnalytics | Keys and Endpoint

Language

Search << Regenerate Key1 Regenerate Key2

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource Management

Features

Keys and Endpoint

Encryption

Pricing tier

Networking

Identity

Cost analysis

Properties

Info These keys are used to access your Azure AI service API. Do not share your keys. Store them securely– for example, using Azure Key Vault. We also recommend regenerating these keys regularly. Only one key is necessary to make an API call. When regenerating the first key, you can use the second key for continued access to the service.

Show Keys

KEY 1

.....

KEY 2

.....

Location/Region ⓘ

westeurope

Endpoint

https://.....

Azure Text Analytics – no Premium

Demo no Premium with Azure subscription

- Power BI Desktop
 - Sentiment Analysis
 - Key Phrases
 - Language detection

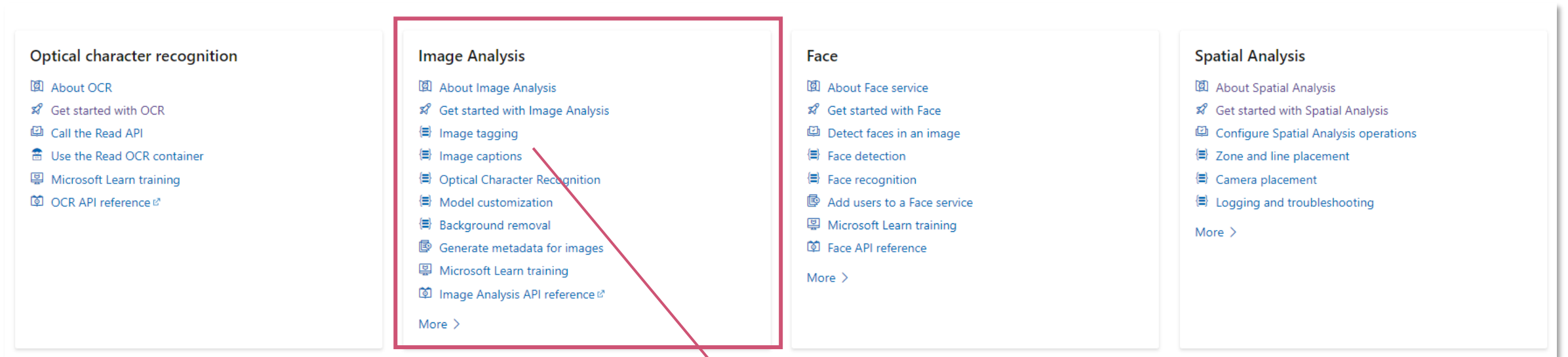
Azure AI Vision

Azure AI Vision documentation

The cloud-based Azure AI Vision API provides developers with access to advanced algorithms for processing images and returning information. By uploading an image or specifying an image URL, Azure AI Vision algorithms can analyze visual content in different ways based on inputs and user choices. Learn how to analyze visual content in different ways with quickstarts, tutorials, and samples.

<https://learn.microsoft.com/en-us/azure/ai-services/computer-vision/>

Azure AI Vision



The screenshot shows the Azure AI Vision documentation page. The 'Image Analysis' section is highlighted with a red box, and a red arrow points from the 'Image Tagging' and 'Image Captions' links in this section to the text 'Image Tagging Image Captions' below. The 'Image Analysis' section contains the following links:

- About Image Analysis
- Get started with Image Analysis
- Image tagging
- Image captions
- Optical Character Recognition
- Model customization
- Background removal
- Generate metadata for images
- Microsoft Learn training
- Image Analysis API reference
- More >

The other sections visible are:

- Optical character recognition**
 - About OCR
 - Get started with OCR
 - Call the Read API
 - Use the Read OCR container
 - Microsoft Learn training
 - OCR API reference
- Face**
 - About Face service
 - Get started with Face
 - Detect faces in an image
 - Face detection
 - Face recognition
 - Add users to a Face service
 - Microsoft Learn training
 - Face API reference
 - More >
- Spatial Analysis**
 - About Spatial Analysis
 - Get started with Spatial Analysis
 - Configure Spatial Analysis operations
 - Zone and line placement
 - Camera placement
 - Logging and troubleshooting
 - More >

<https://learn.microsoft.com/en-us/azure/ai-services/computer-vision/>

Image Tagging
Image Captions

Azure AI Vision – Image Tagging



<https://learn.microsoft.com/en-us/azure/ai-services/computer-vision/concept-tag-images-40>

```
{
  "metadata":
  {
    "width": 300,
    "height": 200
  },
  "tagsResult":
  {
    "values":
    [
      {
        "name": "grass",
        "confidence": 0.9960499405860901
      },
      {
        "name": "outdoor",
        "confidence": 0.9956876635551453
      },
      {
        "name": "building",
        "confidence": 0.9893627166748047
      },
      {
        "name": "property",
        "confidence": 0.9853052496910095
      },
      {
        "name": "plant",
        "confidence": 0.9791355729103088
      },
      {
        "name": "sky",
        "confidence": 0.976455569267273
      },
      {
        "name": "home",
        "confidence": 0.9732913374900818
      }
    ]
  }
}
```

Vision Studio – Image Tagging

Azure AI | Vision Studio

Vision Studio > Extract common tags from images

Extract common tags from images

Extract tags based on thousands of recognizable objects, living beings, scenery, and actions.

Platforms

Cloud

[View documentation](#) [View SDK reference](#) [Use the REST API](#) [View samples on Github](#)

Try it out

To try out this feature, choose from a sample below, or upload your own image. To try out the model without limitations, [sign in with Azure](#)

Choose your language ⓘ

English



<https://portal.vision.cognitive.azure.com/demo/generic-image-tagging>

Azure AI Vision – Image Captions

Caption generates a one sentence description for all image contents.



JSON

```
"captions": [  
  {  
    "text": "a man pointing at a screen",  
    "confidence": 0.4891590476036072  
  }  
]
```

<https://learn.microsoft.com/en-us/azure/ai-services/computer-vision/concept-describe-images-40?tabs=image>

Vision Studio – Image Captions

Azure AI | Vision Studio

Vision Studio > Add captions to images

Add captions to images

Generate a human-readable sentence that describes the content of an image.

Platforms

Cloud

[View documentation](#) [View SDK reference](#) [Use the REST API](#) [View samples on GitHub](#)

Try it out

To try out this feature, choose from a sample below, or upload your own image. To try out the model without limitations, [sign in with Azure](#)



<https://portal.vision.cognitive.azure.com/demo/image-captioning>

Image Tagging demo

- Vision Studio
 - Image tagging
 - Image caption
- Power BI
 - Service: Image tagging with Dataflows
 - Desktop: Image tagging

Image tagging and caption – no Premium

What do you need:

- An Azure subscription
- A registered resource under the Computer Vision in AI Services
- Endpoint and key provided by the service
- Computer Vision API

Computer Vision on Azure AI services

The screenshot displays the Microsoft Azure portal interface. At the top, the 'Microsoft Azure' header includes a search bar for resources, services, and docs. The breadcrumb trail shows 'Home > Azure AI services'. The main heading is 'Azure AI services | Computer vision', with a sub-label 'Azure AI services'. Below this is a search bar and a row of action buttons: '+ Create', 'Manage commitment plans', 'Manage deleted resources', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', and 'Delete'. A filter bar shows 'Subscription equals all', 'Type equals all', 'Resource group equals all', and 'Location equals all', with an 'Add filter' button. The main content area shows 'Showing 1 to 1 of 1 records.' and a table with the following data:

<input type="checkbox"/> Name ↑↓	Kind ↑↓	Location ↑↓	Custom Domain Name ↑↓	Pricing tier ↑↓
<input type="checkbox"/> ComputerVision-amt	ComputerVision	West Europe	computervision-amt	F0

The left sidebar contains a list of Azure AI services: Overview, All Azure AI services, Azure AI services, Azure OpenAI, AI Search, Computer vision (selected), Face API, Custom vision, Speech service, Language service, Translator, Document intelligence, Bot services, Anomaly detector, Content moderator, Health Insights, Personalizer, Metrics advisor, and Immersive reader.

Computer Vision on Azure AI services

Microsoft Azure

Home > Azure AI services | Computer vision >

ComputerVision-amt

Computer vision

Search

Delete

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource Management

Keys and Endpoint

Pricing tier

Networking

Identity

Cost analysis

Properties

Locks

Monitoring

Alerts

Metrics

Diagnostic settings

Logs

Automation

Tasks (preview)

Export template

Help

Resource health

Support + Troubleshooting

Essentials

Resource group (move) : [rg_azureamt](#)

Status : Active

Location : West Europe

Subscription (move) : [Visual Studio Enterprise](#)

Subscription ID : 1d605c4b-b7ee-44af-84b5-1061091ff83f

Tags (edit) : [Add tags](#)

API Kind : ComputerVision

Pricing tier : Free

Endpoint : [https://westeurope.api.cognitive.microsoft.com/vision/v3.2](#)

Manage keys : [Click here to manage keys](#)

Get Started

Get started with your resource in Vision Studio

Try out all Computer Vision features and build your own custom models

[Go to Vision Studio](#)

Keys and endpoint

These keys are used to access your Azure AI service API. Do not share your keys. Store them securely—for example, using Azure Key Vault. We also recommend regenerating these keys regularly. Only one key is necessary to make an API call. When regenerating the first key, you can use the second key for continued access to the service.

[Show Keys](#)

KEY 1

KEY 2

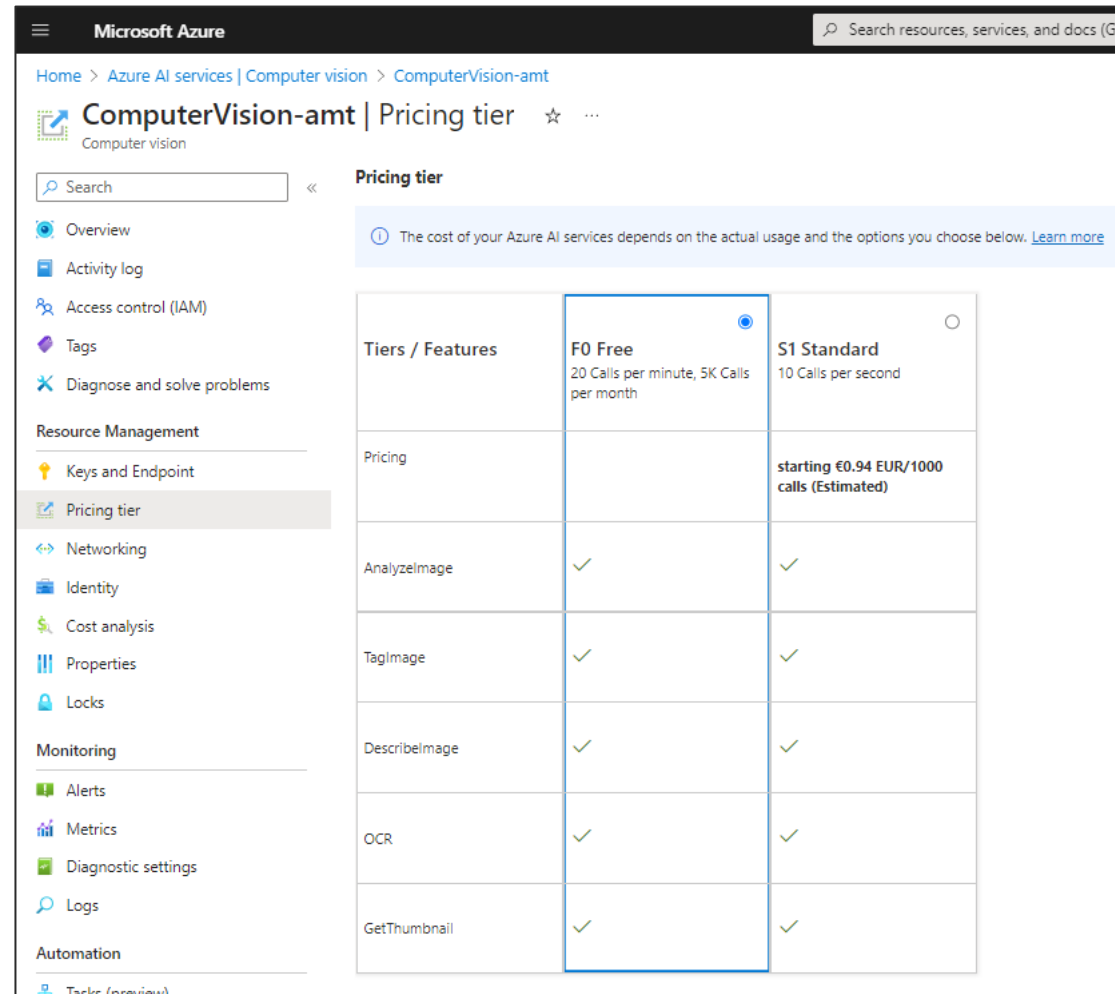
Location/Region ⓘ

westeurope

Endpoint

[https://westeurope.api.cognitive.microsoft.com/vision/v3.2](#)

Computer Vision on Azure AI services - pricing



Microsoft Azure

Home > Azure AI services | Computer vision > ComputerVision-amt

ComputerVision-amt | Pricing tier

Computer vision

Search

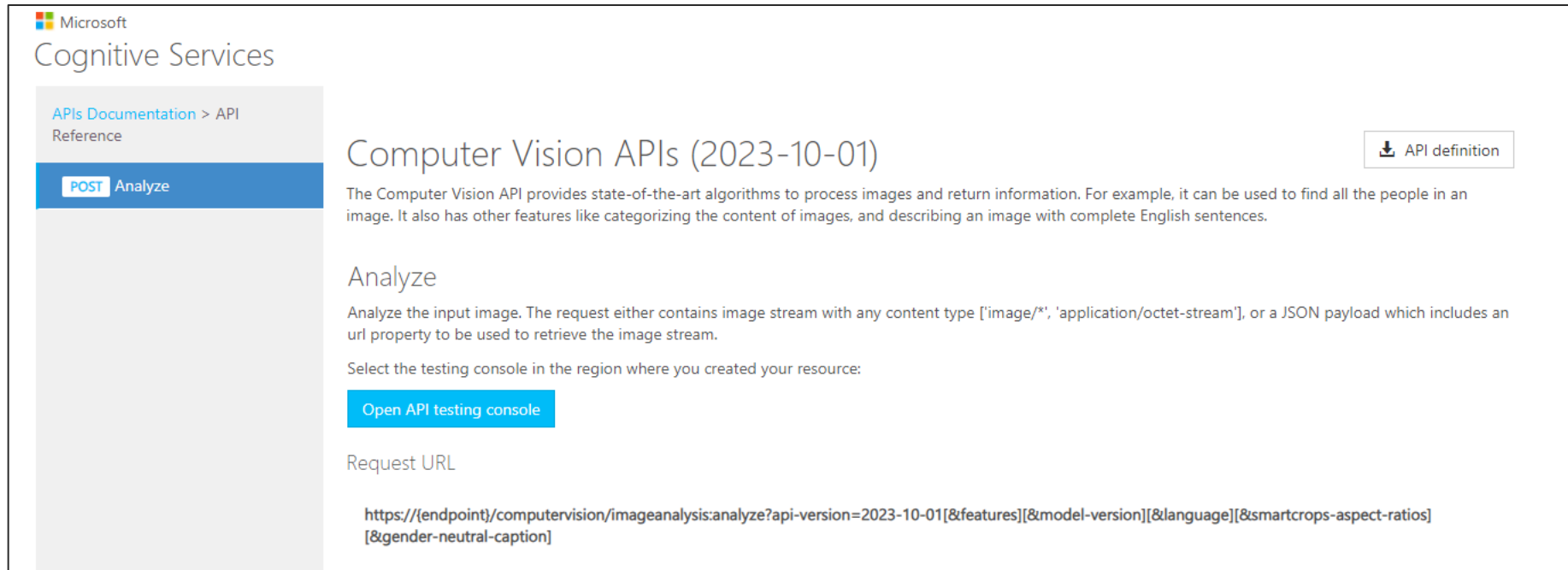
Pricing tier

The cost of your Azure AI services depends on the actual usage and the options you choose below. [Learn more](#)

Tiers / Features	F0 Free 20 Calls per minute, 5K Calls per month	S1 Standard 10 Calls per second
Pricing		starting €0.94 EUR/1000 calls (Estimated)
AnalyzeImage	✓	✓
TagImage	✓	✓
DescribeImage	✓	✓
OCR	✓	✓
GetThumbnail	✓	✓

<https://azure.microsoft.com/en-us/pricing/details/cognitive-services/computer-vision/>

Computer Vision APIs



Microsoft
Cognitive Services

APIs Documentation > API Reference

POST Analyze

[API definition](#)

Computer Vision APIs (2023-10-01)

The Computer Vision API provides state-of-the-art algorithms to process images and return information. For example, it can be used to find all the people in an image. It also has other features like categorizing the content of images, and describing an image with complete English sentences.

Analyze

Analyze the input image. The request either contains image stream with any content type ['image/*', 'application/octet-stream'], or a JSON payload which includes an url property to be used to retrieve the image stream.

Select the testing console in the region where you created your resource:

[Open API testing console](#)

Request URL

```
https://{endpoint}/computervision/imageanalysis:analyze?api-version=2023-10-01[&features][&model-version][&language][&smartcrops-aspect-ratios][&gender-neutral-caption]
```

Request URL - POST

`https://{endpoint}/computervision/imageanalysis:analyze?api-version=2023-10-01[&features][&model-version][&language][&smartcrops-aspect-ratios][&gender-neutral-caption]`

https://eastus.dev.cognitive.microsoft.com/docs/services/Cognitive_Services_Unified_Vision_API_2023-10-01/operations/61d65934cd35050c20f73ab6

Computer Vision APIs - demo

- API testing console

https://eastus.dev.cognitive.microsoft.com/docs/services/Cognitive_Services_Unified_Vision_API_2023-10-01/operations/61d65934cd35050c20f73ab6/console

- Postman

- Power BI Desktop: POST API call

https://eastus.dev.cognitive.microsoft.com/docs/services/Cognitive_Services_Unified_Vision_API_2023-10-01/operations/61d65934cd35050c20f73ab6



Please rate this session!

Your feedback will help with

- speaker evaluation
- content relevance
- decision making for future events
- quality improvement

Q&A



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<https://www.linkedin.com/in/andrea-martorana-tusa-b247541/>



https://github.com/Andrea-Martorana-Tusa/CognitiveServices_PowerBI



Thank you!