

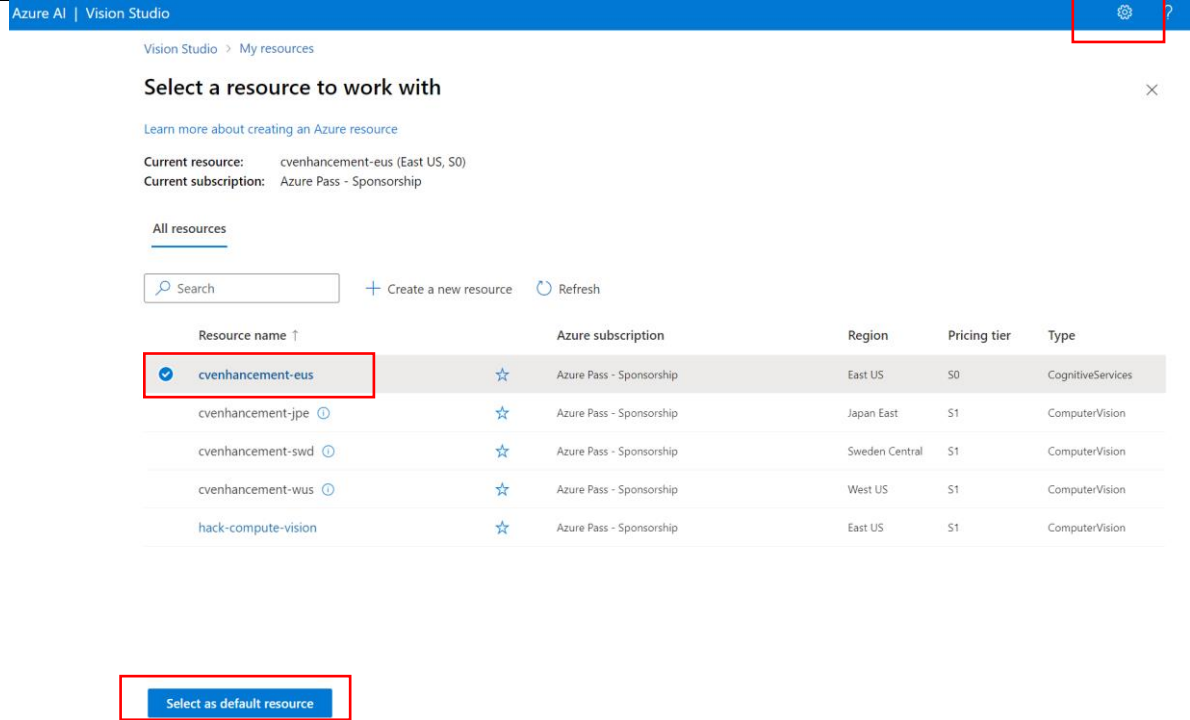
# Lab 4 - Image Search with Vector Search

## Contents

- 1. Multimodal Search in Vision Studio ..... 2
- 2. Image Search in custom code solution ..... 6

## 1. Multimodal Search in Vision Studio

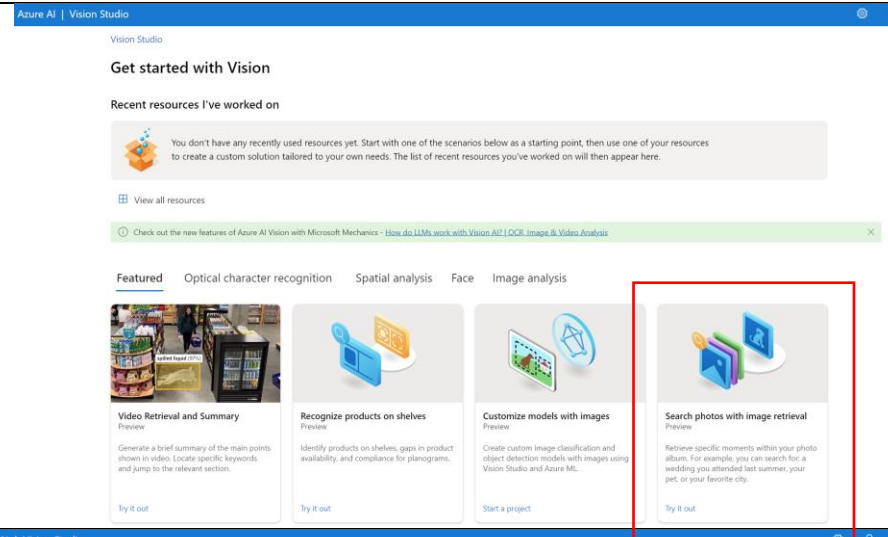
The Image Retrieval APIs convert images and text queries into vectors, enabling semantic-based search without tags or metadata. Try it out in the Vision Studio.

Narrative	Screenshot	Notes																														
<p>In a browser, navigate to the Vision studio:</p> <p><a href="https://vision.azure.com">Vision Studio (azure.com)</a></p> <p>Go to the <b>Settings</b> (symbol in the upper right corner) and select East US Cognitive Services resource “<b>cvenhancement-eus</b>” as default resource (as presented on the screenshot).</p> <p>Click the “<b>Select as default resource</b>” on the bottom. It should be fine after clicking it once, even without a change confirmation.</p>	 <p>The screenshot shows the 'My resources' page in Vision Studio. The page title is 'Select a resource to work with'. Below the title, there is a search bar and buttons for 'Create a new resource' and 'Refresh'. A table lists the resources:</p> <table><thead><tr><th>Resource name</th><th>Azure subscription</th><th>Region</th><th>Pricing tier</th><th>Type</th></tr></thead><tbody><tr><td><b>cvenhancement-eus</b></td><td>Azure Pass - Sponsorship</td><td>East US</td><td>S0</td><td>CognitiveServices</td></tr><tr><td>cvenhancement-jpe</td><td>Azure Pass - Sponsorship</td><td>Japan East</td><td>S1</td><td>ComputerVision</td></tr><tr><td>cvenhancement-swd</td><td>Azure Pass - Sponsorship</td><td>Sweden Central</td><td>S1</td><td>ComputerVision</td></tr><tr><td>cvenhancement-wus</td><td>Azure Pass - Sponsorship</td><td>West US</td><td>S1</td><td>ComputerVision</td></tr><tr><td>hack-compute-vision</td><td>Azure Pass - Sponsorship</td><td>East US</td><td>S1</td><td>ComputerVision</td></tr></tbody></table> <p>At the bottom of the page, there is a button labeled 'Select as default resource'.</p>	Resource name	Azure subscription	Region	Pricing tier	Type	<b>cvenhancement-eus</b>	Azure Pass - Sponsorship	East US	S0	CognitiveServices	cvenhancement-jpe	Azure Pass - Sponsorship	Japan East	S1	ComputerVision	cvenhancement-swd	Azure Pass - Sponsorship	Sweden Central	S1	ComputerVision	cvenhancement-wus	Azure Pass - Sponsorship	West US	S1	ComputerVision	hack-compute-vision	Azure Pass - Sponsorship	East US	S1	ComputerVision	
Resource name	Azure subscription	Region	Pricing tier	Type																												
<b>cvenhancement-eus</b>	Azure Pass - Sponsorship	East US	S0	CognitiveServices																												
cvenhancement-jpe	Azure Pass - Sponsorship	Japan East	S1	ComputerVision																												
cvenhancement-swd	Azure Pass - Sponsorship	Sweden Central	S1	ComputerVision																												
cvenhancement-wus	Azure Pass - Sponsorship	West US	S1	ComputerVision																												
hack-compute-vision	Azure Pass - Sponsorship	East US	S1	ComputerVision																												

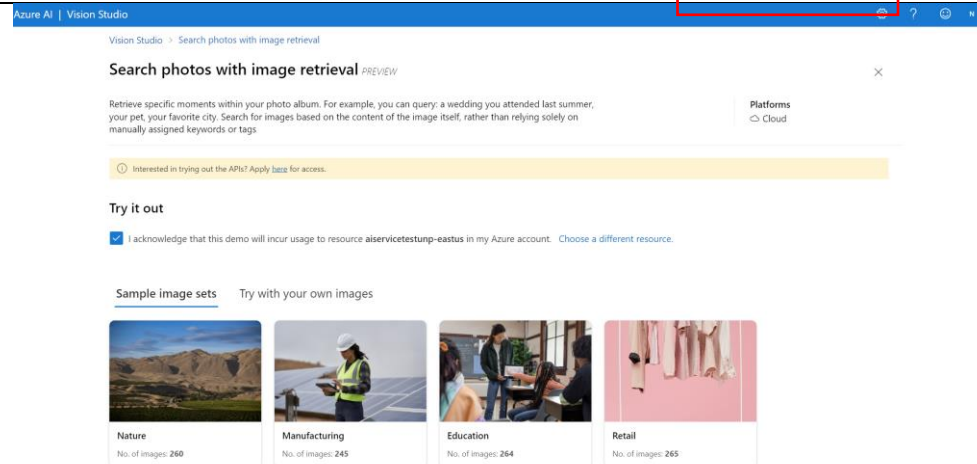
Switch back to the home page:

[Vision Studio \(azure.com\)](https://vision.azure.com)

Click on the feature “**Search photos with image retrieval**”.



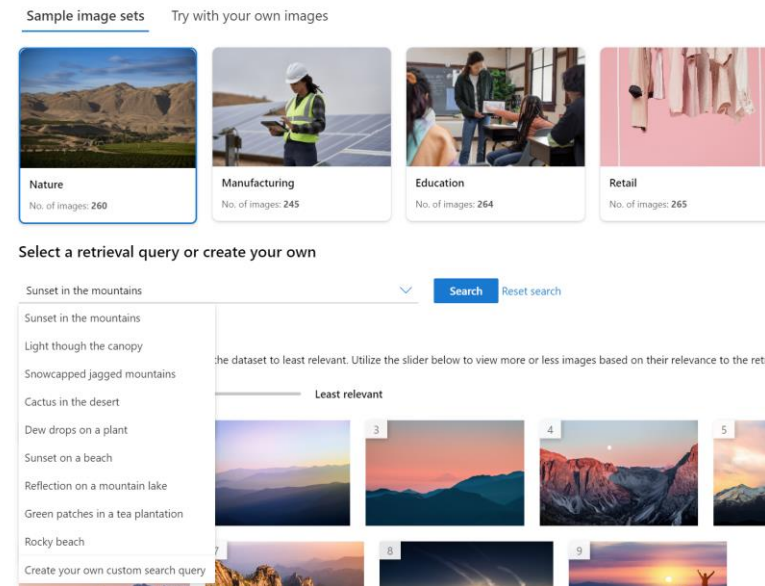
Tick the **acknowledgement** to use the resource **cvenhancement-eus**. If you cannot, move back to settings and set it as your resource (previous step).



Now you can select an image among the [sample set](#).

Then, select a [retrieval query](#) in the dropdown menu. Alternatively, try to create your own query. Hit [Search](#).

You can check the query results and adjust from most to least relevant results with the slider bar.



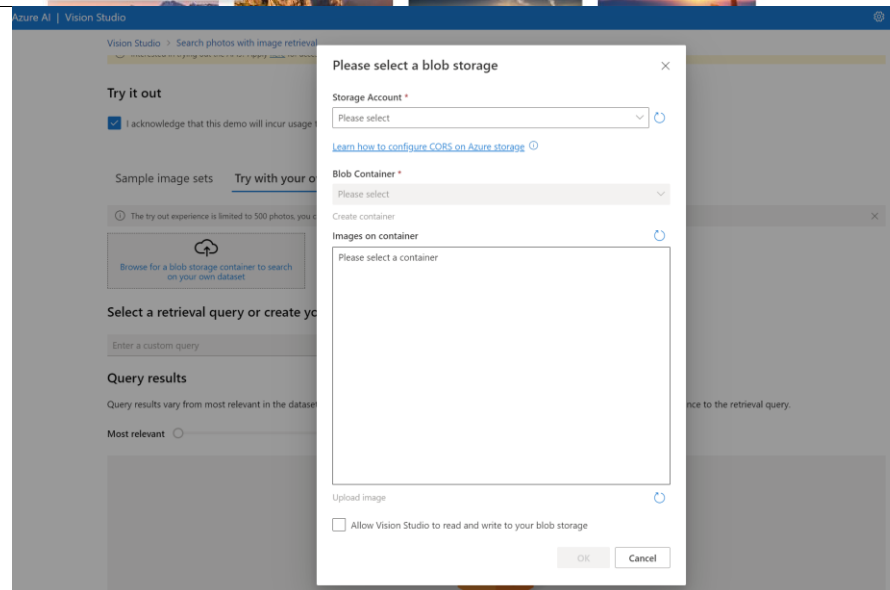
Optional:

You can switch the tab to [try with your own images](#).

Select the blob storage account [“sqlhacksaj754o5hum2r36”](#).

Select the container [“imagesearch”](#).

Check the next screenshot for an example.



Please select a blob storage

Storage Account \*

sqlhacksaj754o5hum2r36

Learn how to configure CORS on Azure storage

Blob Container \*

imagesearch

Create container

Images on container

Name ↑
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...
68747470733a2f2f6673756e6176616c6173746f726167652e626c6f622e636f72652e77696e646f7...

Upload image

☒ Allow Vision Studio to read and write to your blob storage

Image preview

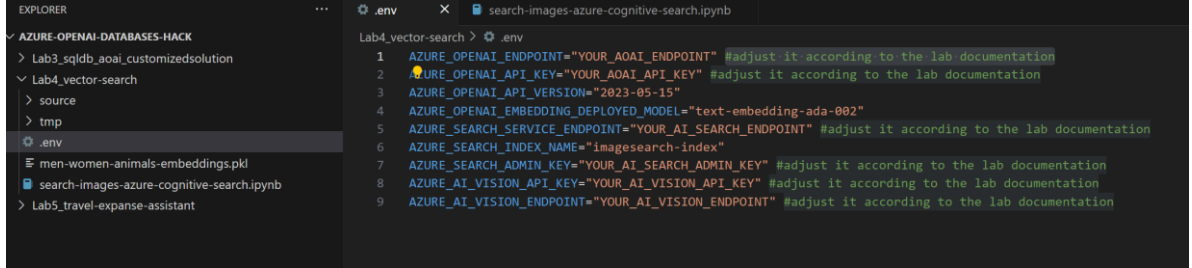
Select a video in left list for previewing

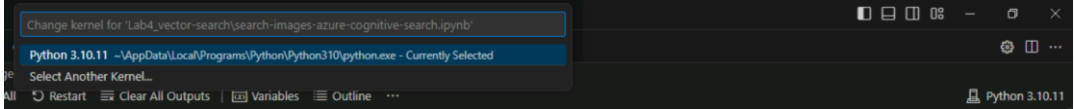
OK

Cancel

## 2. Image Search in custom code solution

Now, let's try image search in a notebook.

Narrative	Screenshot	Notes
<p>Back in <b>Visual Studio Code</b>, navigate to the repository again and go to the <b>Lab 4_vector-search</b> subfolder.</p>		
<p>Navigate to the <b>.env</b> file in Lab 4: <b>"Azure-OpenAI-Databases-Hack\Lab4_vector-search\.env"</b></p> <p>Then fill out the values accordingly.</p>	 <pre> 1 AZURE_OPENAI_ENDPOINT="YOUR_AOAI_ENDPOINT" #adjust it according to the lab documentation 2 AZURE_OPENAI_API_KEY="YOUR_AOAI_API_KEY" #adjust it according to the lab documentation 3 AZURE_OPENAI_API_VERSION="2023-05-15" 4 AZURE_OPENAI_EMBEDDING_DEPLOYED_MODEL="text-embedding-ada-002" 5 AZURE_SEARCH_SERVICE_ENDPOINT="YOUR_AI_SEARCH_ENDPOINT" #adjust it according to the lab documentation 6 AZURE_SEARCH_INDEX_NAME="imagesearch-index" 7 AZURE_SEARCH_ADMIN_KEY="YOUR_AI_SEARCH_ADMIN_KEY" #adjust it according to the lab documentation 8 AZURE_AI_VISION_API_KEY="YOUR_AI_VISION_API_KEY" #adjust it according to the lab documentation 9 AZURE_AI_VISION_ENDPOINT="YOUR_AI_VISION_ENDPOINT" #adjust it according to the lab documentation </pre>	
<p><b>Copy the following credentials</b> into the <b>.env</b> file.</p>	<pre> AZURE_OPENAI_ENDPOINT="https://sqloai-hack-0224.openai.azure.com/" AZURE_OPENAI_API_KEY="61c63d914d95464a816a4d4d0b9ac44d" AZURE_OPENAI_API_VERSION="2023-05-15" AZURE_OPENAI_EMBEDDING_DEPLOYED_MODEL="text-embedding-ada-002" AZURE_SEARCH_SERVICE_ENDPOINT="https://aisearch-eus.search.windows.net" AZURE_SEARCH_INDEX_NAME="imagesearch-index" AZURE_SEARCH_ADMIN_KEY="gFnar3eBpybthAAkhGxXRkC23gFKiBozRAMwRdKJCAzSeCYFd56" AZURE_AI_VISION_API_KEY="f7f17dd6b8db44e18115364276c2bb19" AZURE_AI_VISION_ENDPOINT="https://hack-compute-vision.cognitiveservices.azure.com/" </pre>	

<p>Open the <b>Notebook “search-images.ipynb”</b>.</p> <p>If you are prompted to install an <b>ipykernel</b>, do so by clicking “install”. Afterwards, select the <b>python 3.10.11 kernel</b> on the top as shown in the screenshot.</p> <p>All following instructions can be found in the notebook comments.</p> <p><b>Run through all cells</b> in the notebook to implement the required scenario.</p>		
<p>If you run into module related errors, make sure you have all required packages installed by running this cell:</p>	<p># If you run into module related errors, make sure you have all required packages installed by running this cell:</p> <pre>%pip install azure-search-documents==11.4.0b11 --pre %pip install azure-ai-vision==0.13.0b1 %pip install azure-search --pre --upgrade %pip install azure-core --pre --upgrade %pip install matplotlib</pre> <p>Allow the firewall to download the software.</p>	