

Generate images with AI

1. Introduction

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/1-introduction>

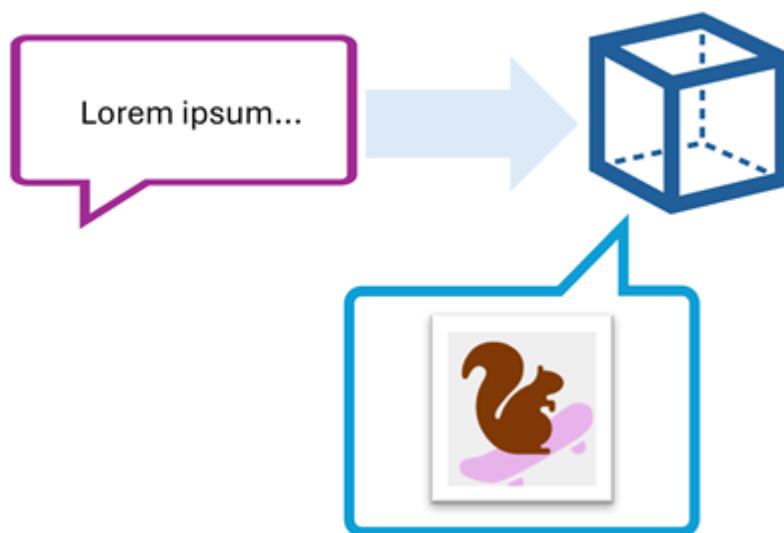
Introduction

Completed

- 1 minute

With Microsoft Foundry, you can use language models to generate content based on natural language prompts. Often the generated content is in the form of natural language text, but increasingly, models can generate other kinds of content.

For example, the OpenAI DALL-E image generation model can create original graphical content based on a description of a desired image.



The ability to use AI to generate graphics has many applications; including the creation of illustrations or photorealistic images for articles or marketing collateral, generation of unique product or company logos, or any scenario where a desired image can be described.

In this module, you'll learn how to develop an application that uses generative AI to generate original images.

2. What are image-generation models?

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/2-what-is-dall-e>

What are image-generation models?

Completed

- 2 minutes

Microsoft Foundry supports multiple models that are capable of generating images, including (but not limited to):

- DALL-E 3
- GPT-Image 1

Tip

For the latest information about model availability in Microsoft Foundry, view the model catalog. See [Model catalog and collections in Microsoft Foundry portal](#) for details.

Image generation models are generative AI model that can create graphical data from natural language input. Put more simply, you can provide the model with a description and it can generate an appropriate image.

For example, you might submit the following natural language prompt to an image generation model:

A squirrel on a motorcycle

This prompt could result in the generation of graphical output such as the following image:



The images generated are original; they aren't retrieved from a curated image catalog. In other words, the model isn't a search system for *finding* appropriate images - it is an artificial intelligence (AI) model that *generates* new images based on the data on which it was trained.

3. Explore image-generation models in Microsoft Foundry portal

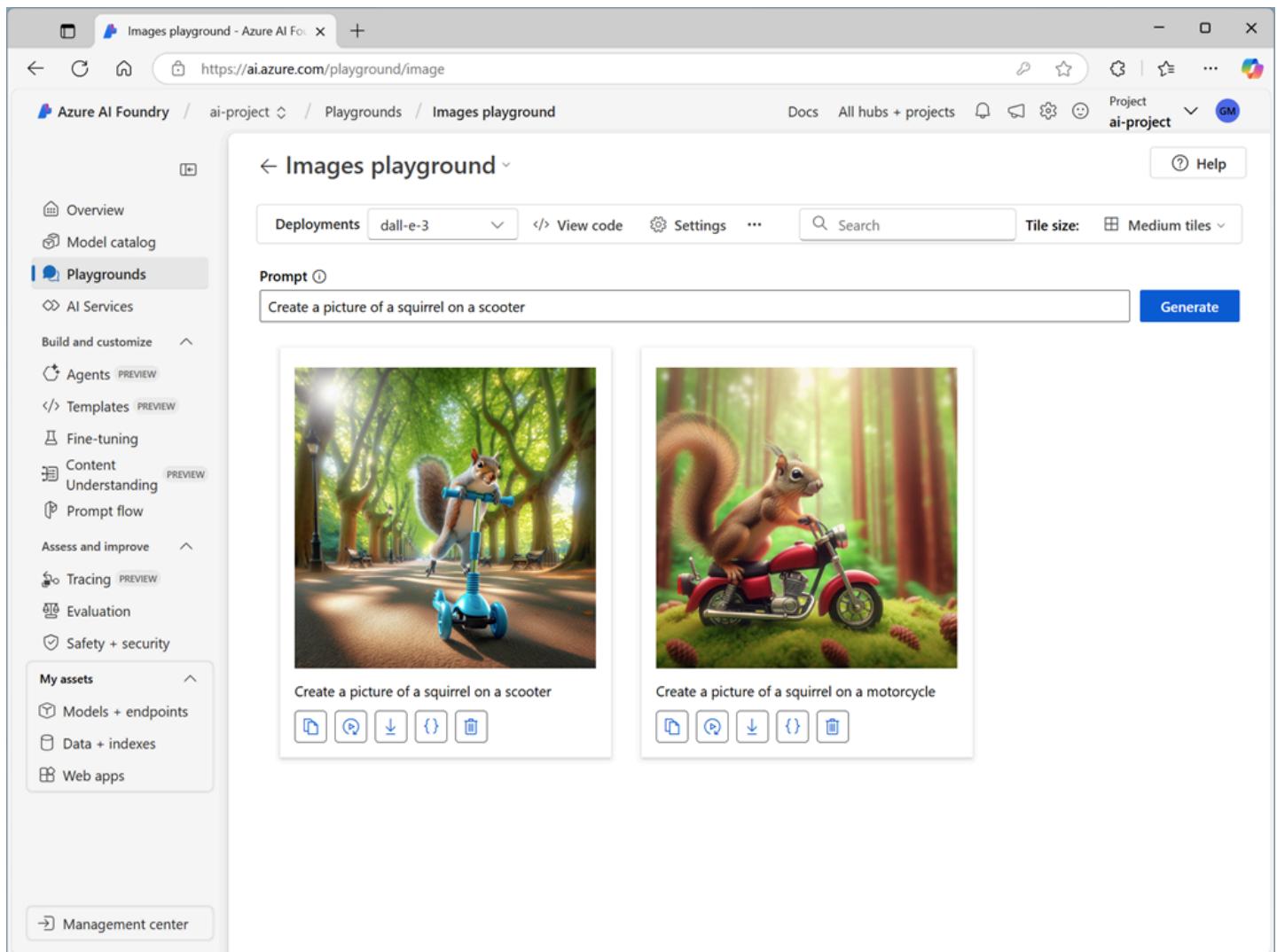
<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/3-dall-e-in-openai-studio>

Explore image-generation models in Microsoft Foundry portal

Completed

- 3 minutes

To experiment with image generation models, you can create a Microsoft Foundry project and use the *Images playground* in Microsoft Foundry portal to submit prompts and view the resulting generated images.



When using the playground, you can adjust the **settings** to control the output. For example, when using a DALL-E model you can specify:

- The resolution (size) of the generated images. Available sizes are `1024x1024` (which is the default value), `1792x1024`, or `1024x1792`.
- The image style to be generated (such as `vivid` or `natural`).
- The image quality (choose from `standard` or `hd`).

4. Create a client application that uses an image generation model

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/4-dall-e-rest-api>

Create a client application that uses an image generation model

Completed

- 3 minutes

You can use a REST API to consume DALL-E models from applications. Alternatively, you can use a language-specific SDK (for example, the OpenAI Python SDK or the Azure OpenAI .NET SDK) to abstract the REST methods.

You initiate the image generation process by submitting a request to the service endpoint with the authorization key in the header. The request contains parameters describing the image-generation requirements. For example, parameters for a DALL-E model include:

- **prompt**: The description of the image to be generated.
- **n**: The number of images to be generated. DALL-E 3 only supports n=1.
- **size**: The resolution of the image(s) to be generated (1024x1024, 1792x1024, or 1024x1792 for DALL-E 3)
- **quality** *Optional*: The quality of the image (*standard* or *hd*). Defaults to *standard*.
- **style** *Optional*: The visual style of the image (*natural* or *vivid*). Defaults to *vivid*.

For example, the following JSON could be submitted via the REST API to a DALL-E model, prompting it to generate an 1024 x 1024 image of a badger wearing a tuxedo:

```
{  
  "prompt": "A badger wearing a tuxedo",  
  "n": 1,  
  "size": "1024x1024",  
  "quality": "hd",  
  "style": "vivid"  
}
```

With DALL-E 3, the result from the request is processed synchronously with the response containing the URL for the generated image. The response is similar to the following JSON:

```
{  
  "created": 1686780744,  
  "data": [  
    {  
      "url": "<URL of generated image>",  
      "revised_prompt": "<prompt that was used>"  
    }  
  ]  
}
```

The **data** element includes the **url** value, which references a PNG image file generated from the prompt that you can then view or download. The response also contains a **revised prompt** that was used to generate the image, which was updated by the system to achieve the most desirable results. In this example, the image might look similar to the following image:



5. Exercise - Generate images with AI

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/5-exercise-use-dall-e>

Exercise - Generate images with AI

Completed

- 20 minutes

Now it's your chance to use generative AI to create images. In this exercise, you'll provision a Microsoft Foundry project and deploy a DALL-E model. Then, you'll explore image generation in the Microsoft Foundry portal. Finally, you'll use the Python or .NET SDK to consume the DALL-E model from a custom application.

Launch the exercise and follow the instructions.

[Launch Exercise](#)

Tip

After completing the exercise, if you've finished exploring Microsoft Foundry, delete the Azure resources that you created during the exercise.

6. Module assessment

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/6-knowledge-check>

Module assessment

Completed

- 3 minutes

7. Summary

<https://learn.microsoft.com/en-us/training/modules/generate-images-azure-openai/7-summary>

Summary

Completed

- 1 minute

This module described image generation models, and how you can use them in Microsoft Foundry to generate images based on natural language prompts. You can explore image generation models using the *Images* playground in Microsoft Foundry portal, and you can use REST APIs or SDKs to build applications that generate new images.

Tip

To learn more about using DALL-E in the Azure OpenAI service, see [Quickstart: Generate images with Azure OpenAI Service](#) in the Azure OpenAI service documentation.