

User Manual - TAI Dalle Component for Delphi

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1. Introduction

The TAI Dalle component is a native Delphi implementation for interacting with OpenAI's DALL-E API, a powerful AI tool for image generation. This component allows developers to integrate AI-based image generation capabilities directly into their Delphi applications.

DALL-E can create realistic and artistic images from text descriptions, and this component provides a simple interface to access these capabilities from Delphi applications.

2. Features

The component offers three main functionalities:

- **Image Generation:** Create new images from text descriptions
- **Image Editing:** Modify existing images using masks and prompts
- **Variations:** Generate variations of existing images

Supports both DALL-E 2 and DALL-E 3, with specific features for each version.

3. Component Description

TAI Dalle inherits from TComponent and is designed for use both at design time and runtime. The component automatically handles:

- OpenAI API authentication
- HTTP request management
- JSON response processing
- Image stream handling
- Image format conversion

4. Properties

Main Properties

Property	Type	Description
ApiKey	String	OpenAI API key for authentication
Url	String	API base URL (default: https://api.openai.com/v1/)
UseDalle3	Boolean	Determines if DALL-E 3 (True) or DALL-E 2 (False) is used
HdQuality	Boolean	Activates high-quality image generation (DALL-E 3 only)
ResponseFormat	TAiImageResponseFormat	Response format (URL or Base64)
StyleFormat	TAiImageAStyleFormat	Image style (Vivid or Natural)
User	String	User identifier for the API

Response Properties

Property	Type	Description
Images	TAiDalleFiles	Array of generated images
Revised_Prompt	String	AI-revised prompt
Prompt	String	Original prompt used

5. Methods

Generate

```
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Function Generate(aPrompt: String; aSize: TAiImageSize; N: Integer):
TAiDalleFile;
```

Generates a new image from a text description.

Edit

```
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```

```
Function Edit(aImage, aMask: TMemoryStream; aPrompt: String; aSize:
TAiImageSize; N: Integer): TAiDalleFile;
```

Edits an existing image using a mask and prompt.

Variation

```
Function Variation(aImage: TMemoryStream; aSize: TAiImageSize; N:
Integer): TAiDalleFile;
```

Generates variations of an existing image.

6. Usage Example

```
procedure TForm1.GenerateImage;
var
  DalleComponent: TAiDalle;
  GeneratedImage: TAiDalleFile;
begin
  DalleComponent := TAiDalle.Create(nil);
  try
    // Basic configuration
    DalleComponent.ApiKey := 'your-api-key';
    DalleComponent.UseDalle3 := True;
    DalleComponent.HdQuality := True;

    // Generate image
    GeneratedImage := DalleComponent.Generate(
      'A mountainous landscape at sunset with lakes and trees',
      TiaSize1024, // 1024x1024
      1 // One image
    );

    // Save the image
    if Assigned(GeneratedImage) then
      GeneratedImage.Image.SaveToFile('landscape.png');
  finally
    DalleComponent.Free;
  end;
end;
```

7. Technical Considerations

Image Sizes

- DALL-E 2: 256x256, 512x512, 1024x1024
- DALL-E 3: 1024x1024, 1792x1024, 1024x1792

Limitations

- DALL-E 3 only allows generating one image per request (N=1)
- Image editing is only available in DALL-E 2
- Variations are only available in DALL-E 2

8. Requirements and Dependencies

The component requires the following units:

- System.SysUtils
- System.Net.HttpClient
- System.JSON
- REST.Client
- uMakerAi.Core

An active OpenAI account and valid API key are required to use the component.