

Depth AI Manual v1.0.0

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Introduction

Depth AI : Transforming a Single Image into Realistic 3D Shapes

Depth AI effectively extracts depth information from images, transforming them into realistic 3D shapes.

Key Features

Advanced Technology: Leverage advanced algorithms for accurate and extract depth information from images.

Main Object Generation: Seamlessly creates 3D meshes focused solely on the main object within an image.

Depth Image Visualization: You have the power to control the resolution to adjust the vertex density of the generated shapes.

Features Overview

Algorithms:

Leverage advanced algorithms like YOLO and Mask2Former to accurately identify and extract depth information from 2D images.

Precision Tuning Controls

Fine-tune your models with adjustable parameters such as Smooth, Scale, Strength, Contrast, Interpolation, and Saturation for enhanced customization.

Multi-Resolution Support

Fine-tune your models with adjustable parameters such as Smooth, Scale, Strength, Contrast, Interpolation, and Saturation for enhanced customization.

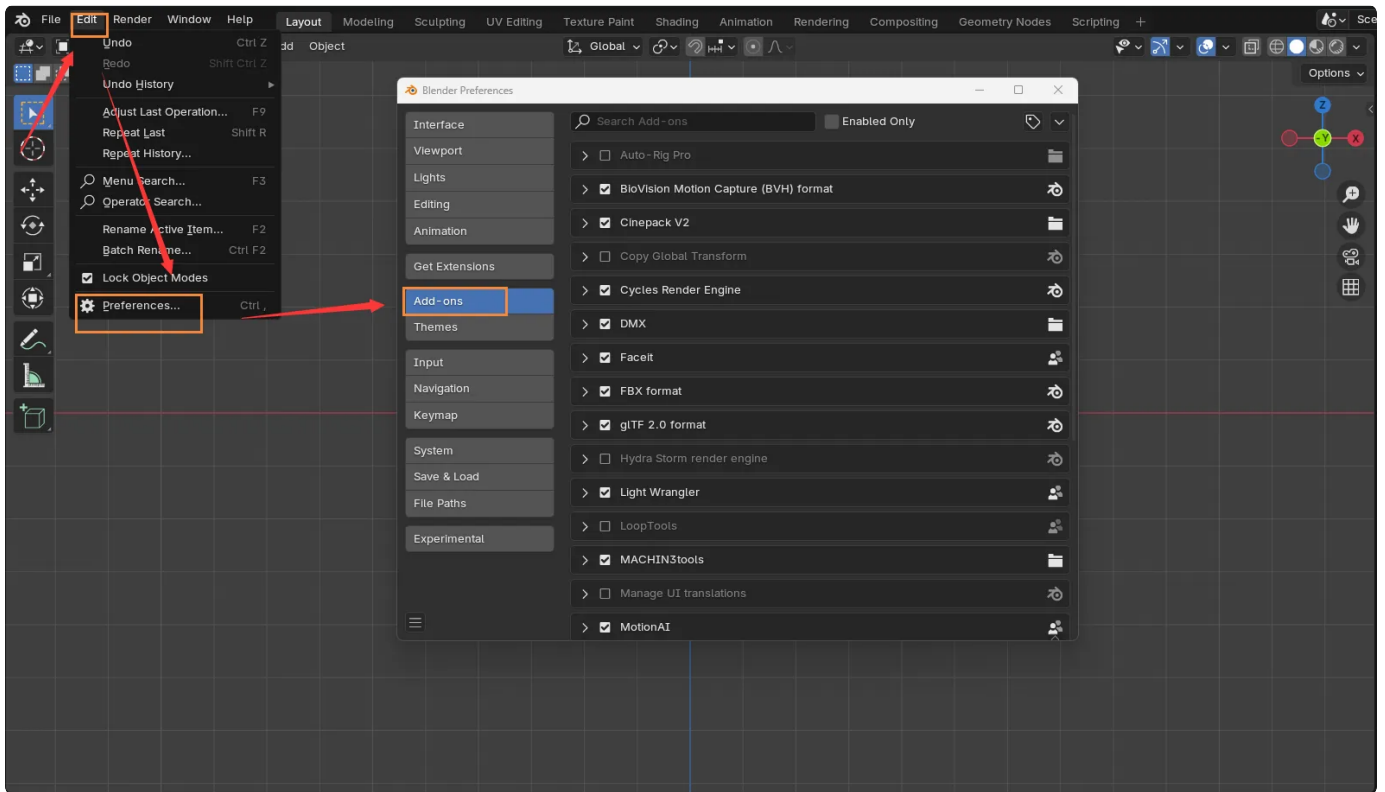
Installation

Download the Plugin

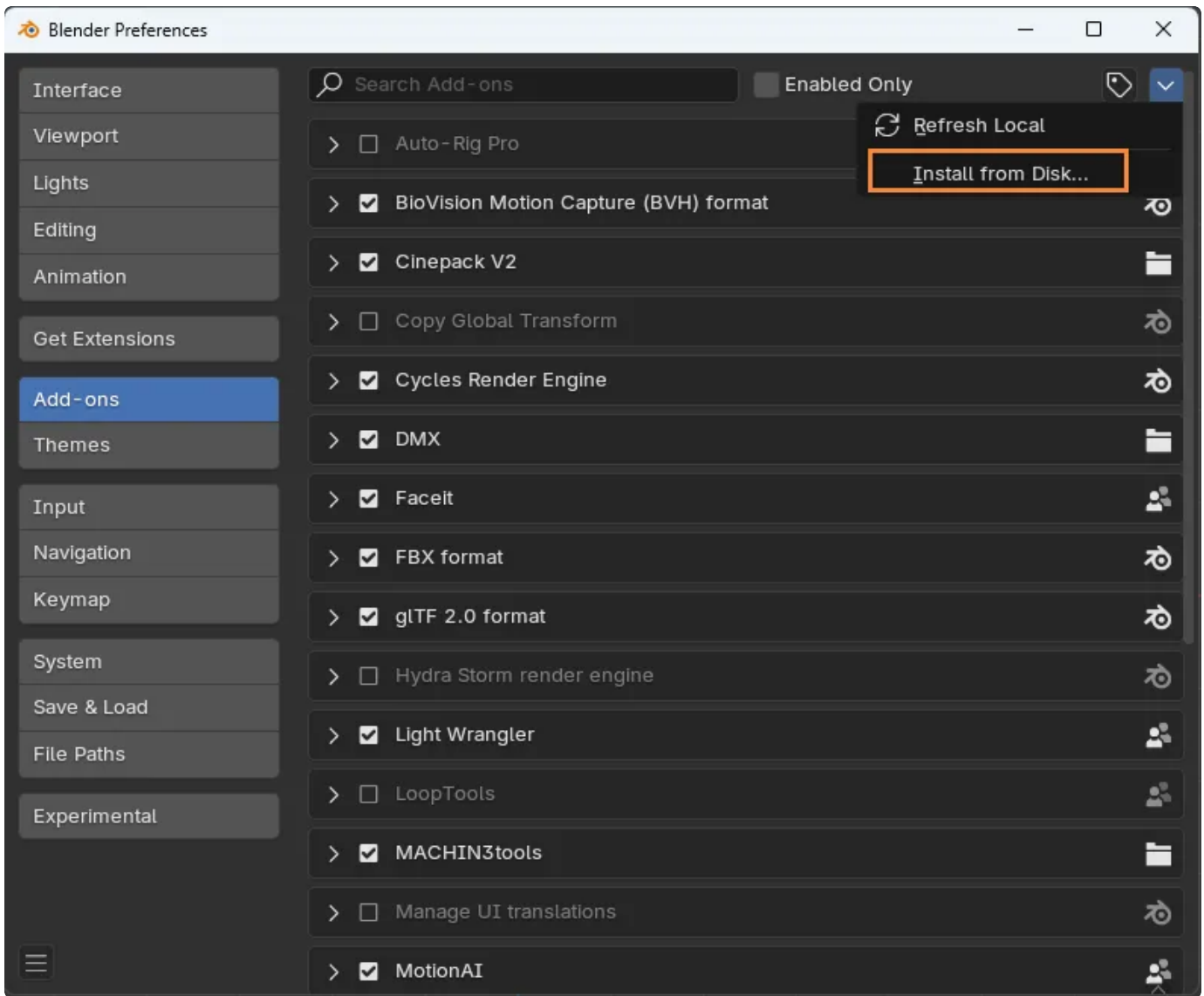
Obtain the Depth AI from the Blender Market.

Install Depth AI

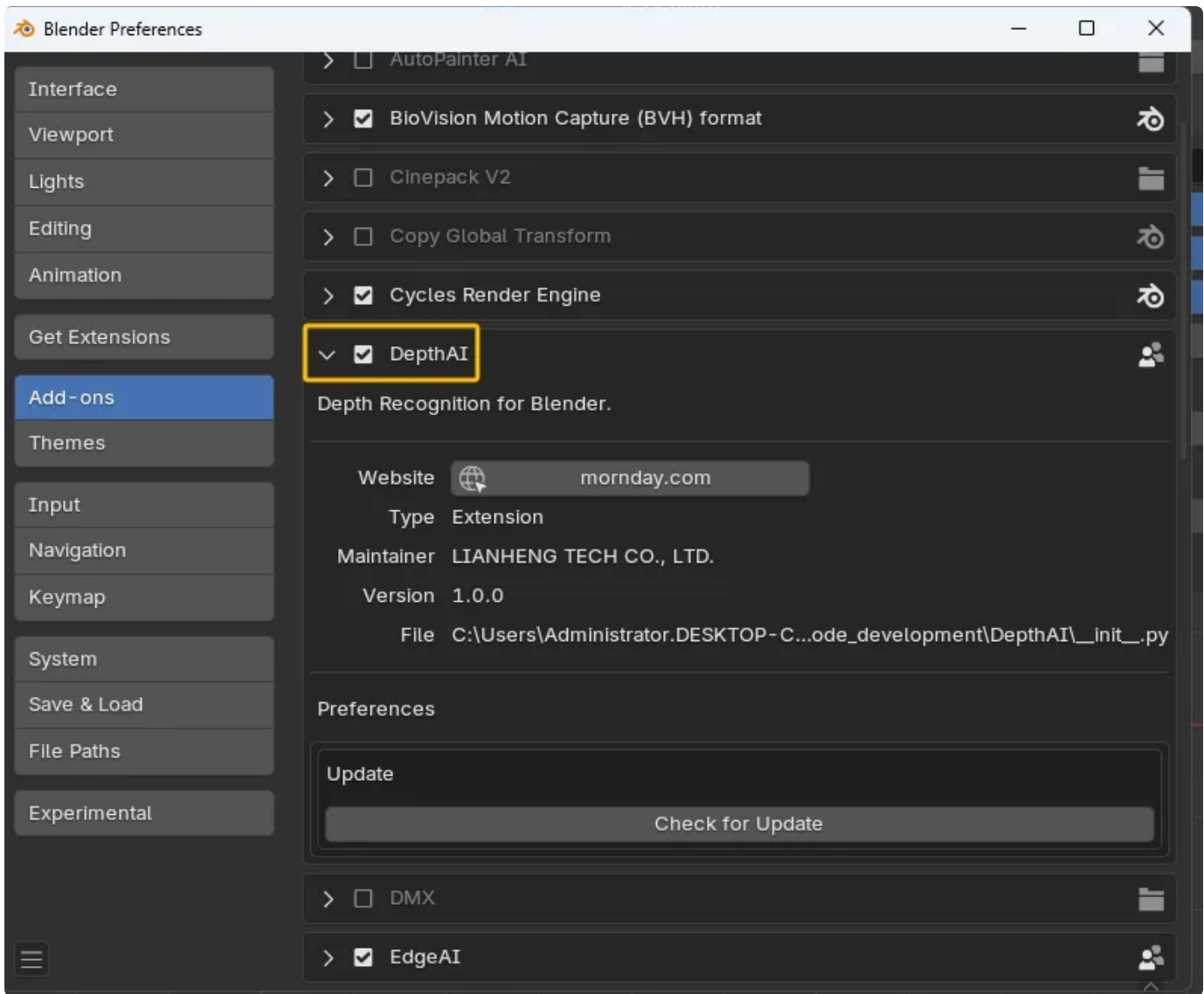
1. Open Blender -> Edit > Preferences > Add-ons.



2. Install from Disk → Select the DepthAI.zip file



3. Enable the Add-on



4. Open the Depth AI Panel and Install Dependencies

- 4.1. Press N on your keyboard or click the small arrow on the right side of the Blender interface to open the sidebar.
- 4.2. In the sidebar, find and select the Depth AI panel.
- 4.3. Depth AI will perform an environment check to ensure the dependency is set up correctly. If any required modules are missing, you will see an option to Install them. Click on this to automatically download and install the necessary requirements.

DepthAI Installation

Please install the missing requirements for DepthAI.

Requirement	Description
ultralytics	For image segmentation
transformers	Deep Learning Framework
timm	Deep Learning Framework
pillow	For image processing
torchvision	For image processing
cv2	
scipy	

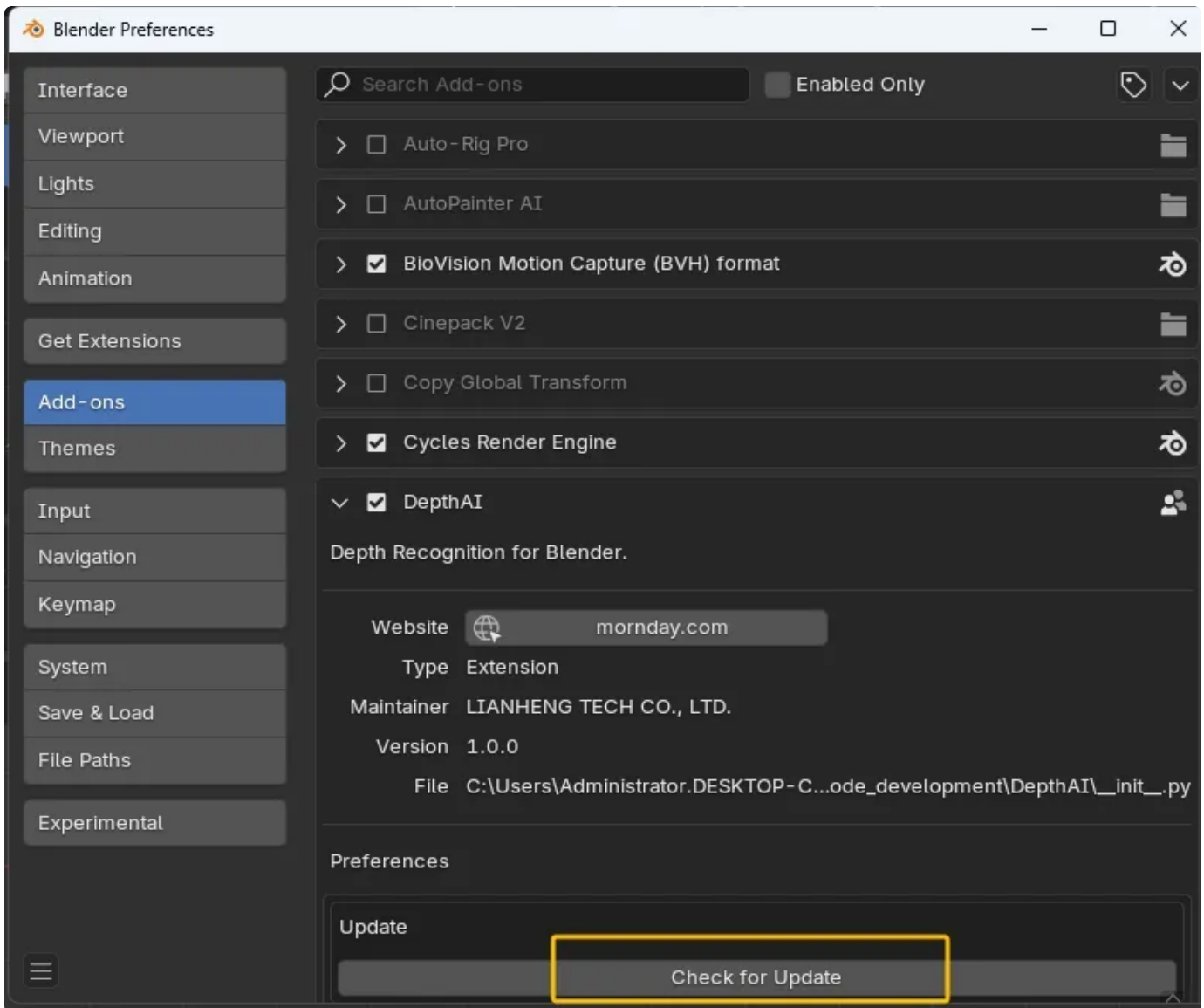
If the download fails, please check your network connection or switch the source and try again

Download Source: Tsinghua

Install Requirements

Update Depth AI

1. Open Blender -> Edit > Preferences > Add-ons.
2. Find Depth AI -> Check for Update.



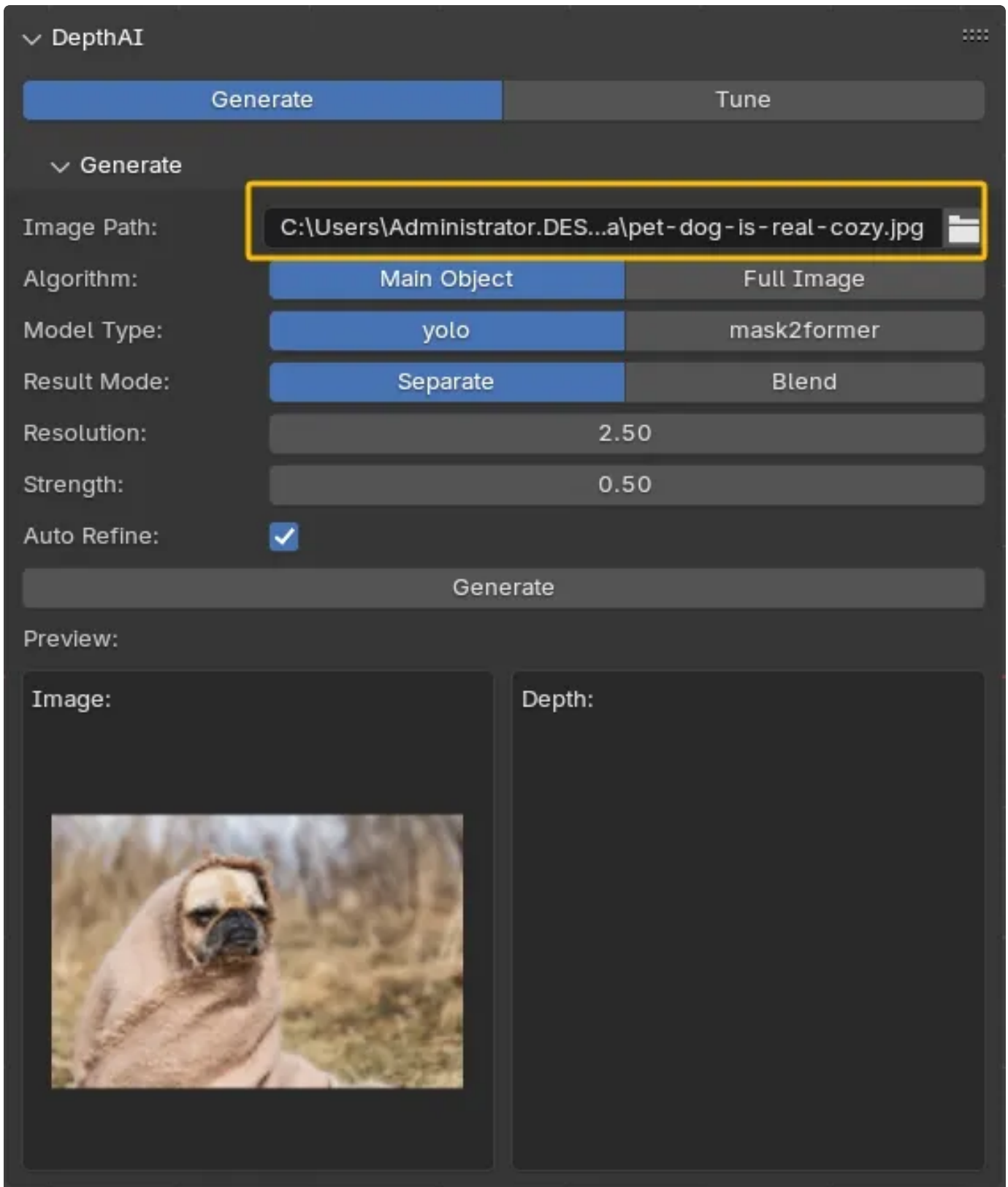
Quick Start – Main Object Generation

WorkFlow: [Main Object Generation](#)

To start using Depth AI, follow the steps below:

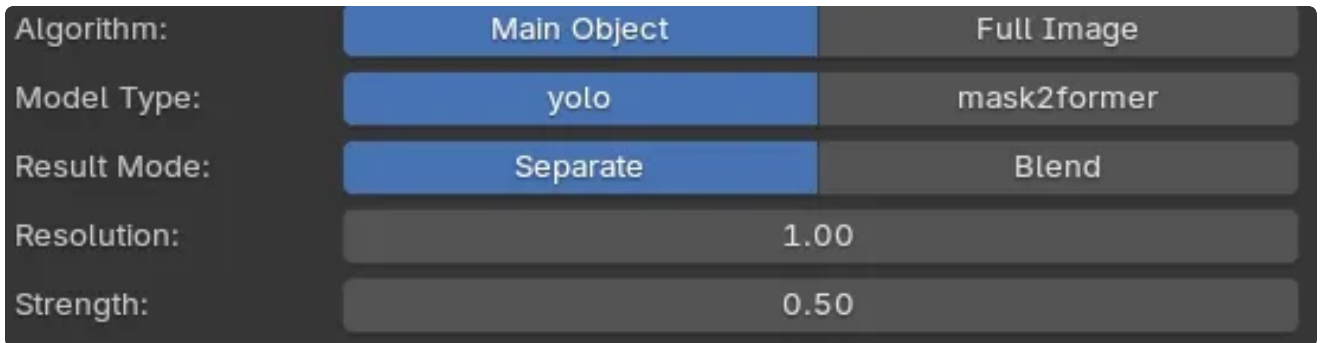
Generate

1. Select the image path, and your image will be displayed below.



2. Choose the algorithm as "Main Object".
3. Choose the model type : yolo or mask2former
4. Choose the method for generating the final model: Separate or Blend
5. Settings:

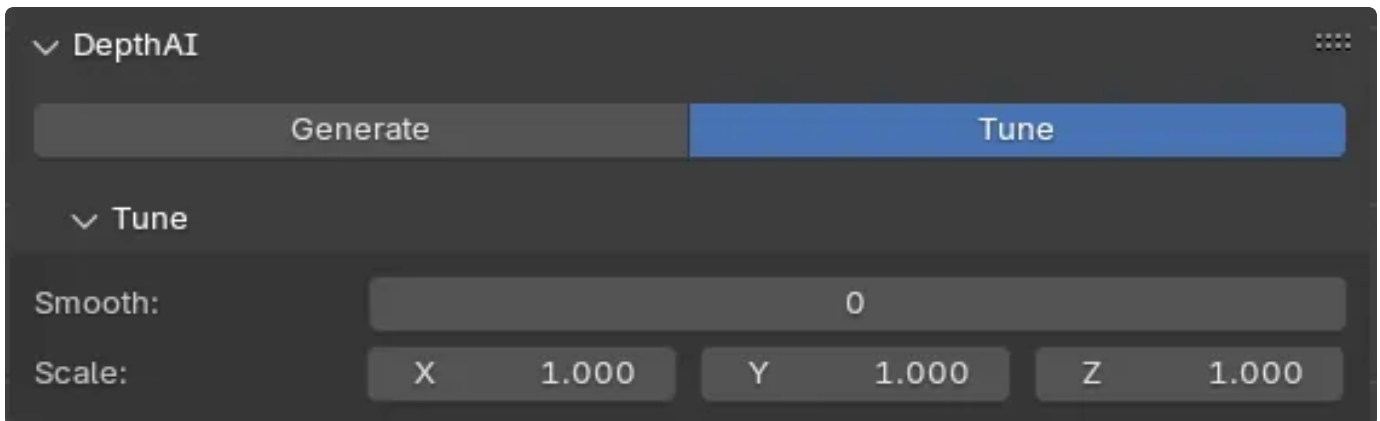
- a. Resolution: Drag the slider to adjust the resolution—the higher the value, the more points are generated, with a range of 0–10.
- b. Strength: Drag the slider to adjust the depth ratio— a higher value results in a more pronounced depth effect, with a range of 0–10.



6. Click on "**Generate**" to start the process. The resulting depth image will be displayed in the preview area on the right.
7. Switch to **Material Preview Mode** to view the recognition results.
8. Click the "**Save Depth**" button to save the depth image for future use.

Tune

1. **Smooth:**
 - Drag the slider to adjust the smoothness of the model's edges.
2. **Scale:**
 - Adjust the scaling factors for the X, Y, and Z directions individually.



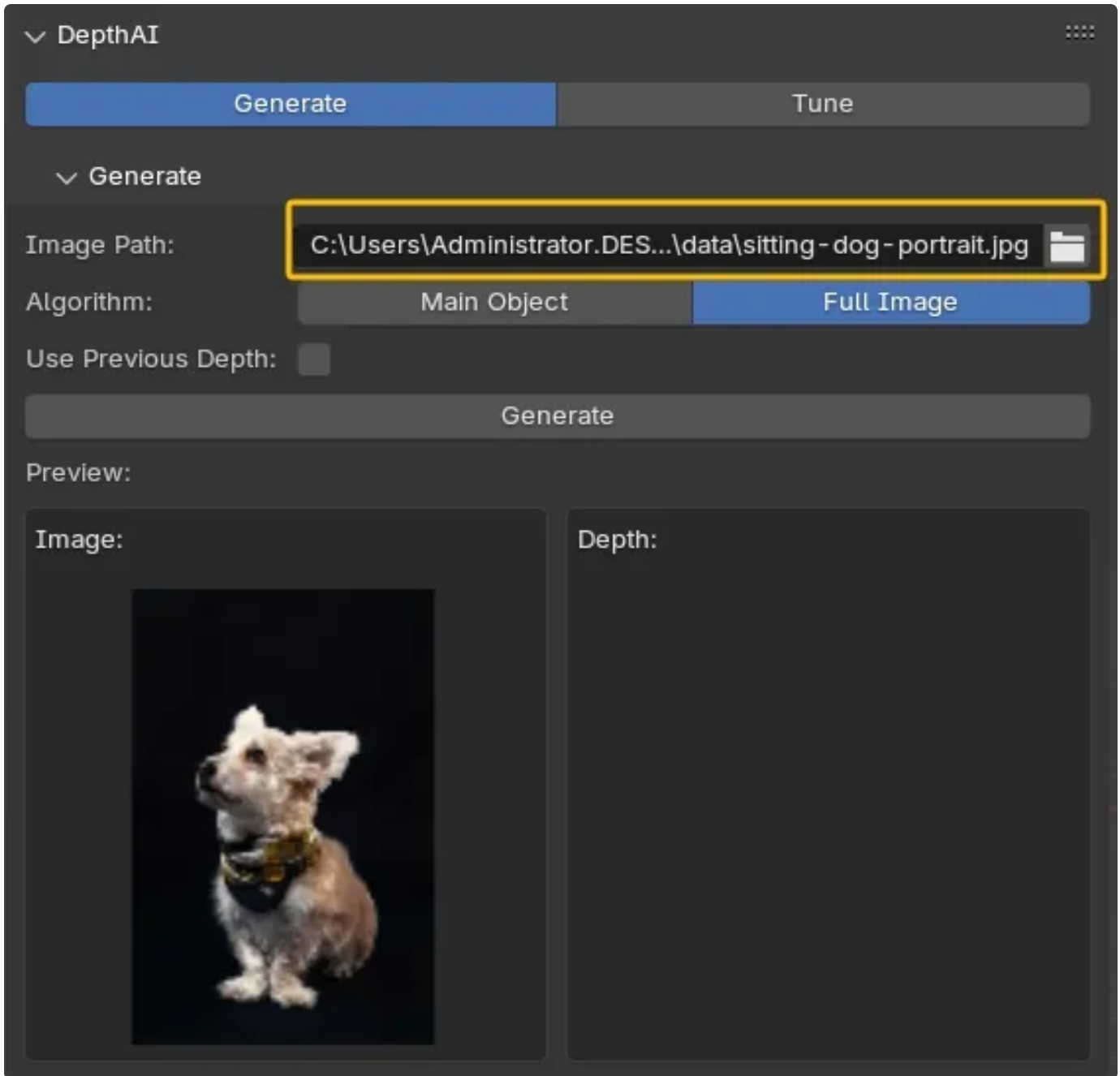
Quick Start – Full Image Generation

Workflow: Full Image Generation

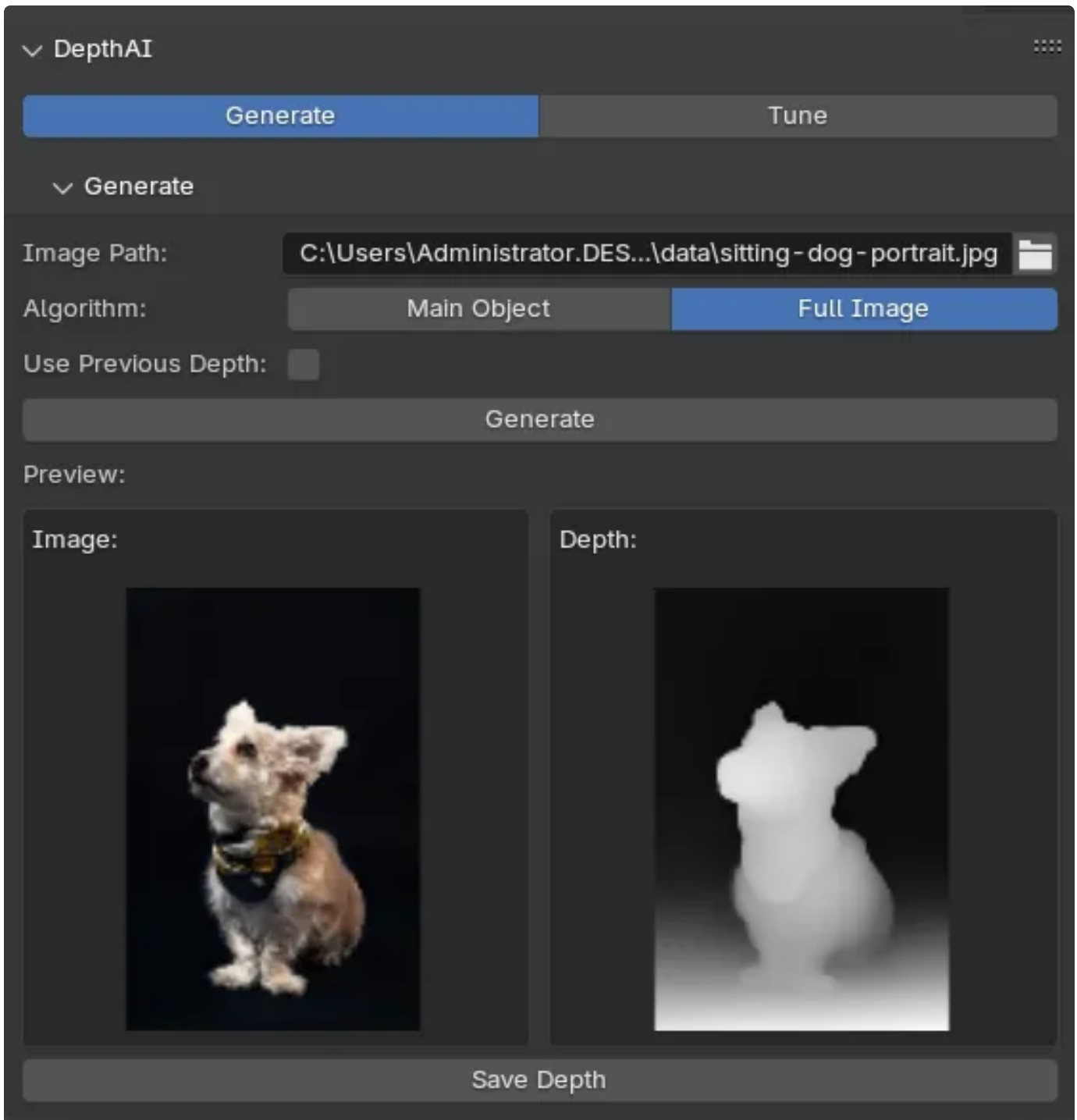
To start using Depth AI, follow the steps below:

Generate

1. Select the image path, and your image will be displayed below.



2. Choose the algorithm as "Full Image".
3. Use Previous Depth: Select a saved depth map generate shapes quickly.
4. Click on "Generate" to start the process. The resulting depth image will be displayed in the preview area on the right.



5. Switch to **Material Preview Mode** to view the recognition results.
6. Click the "**Save Depth**" button to save the depth image for future use.

Tune

1. **Mapping:** Select the mapping type, which includes
 - Extend
 - Clip

- Clip Cube
- Repeat
- Checker

2. **Scale:**

- Adjust the scaling factors for the X, Y, and Z directions individually.

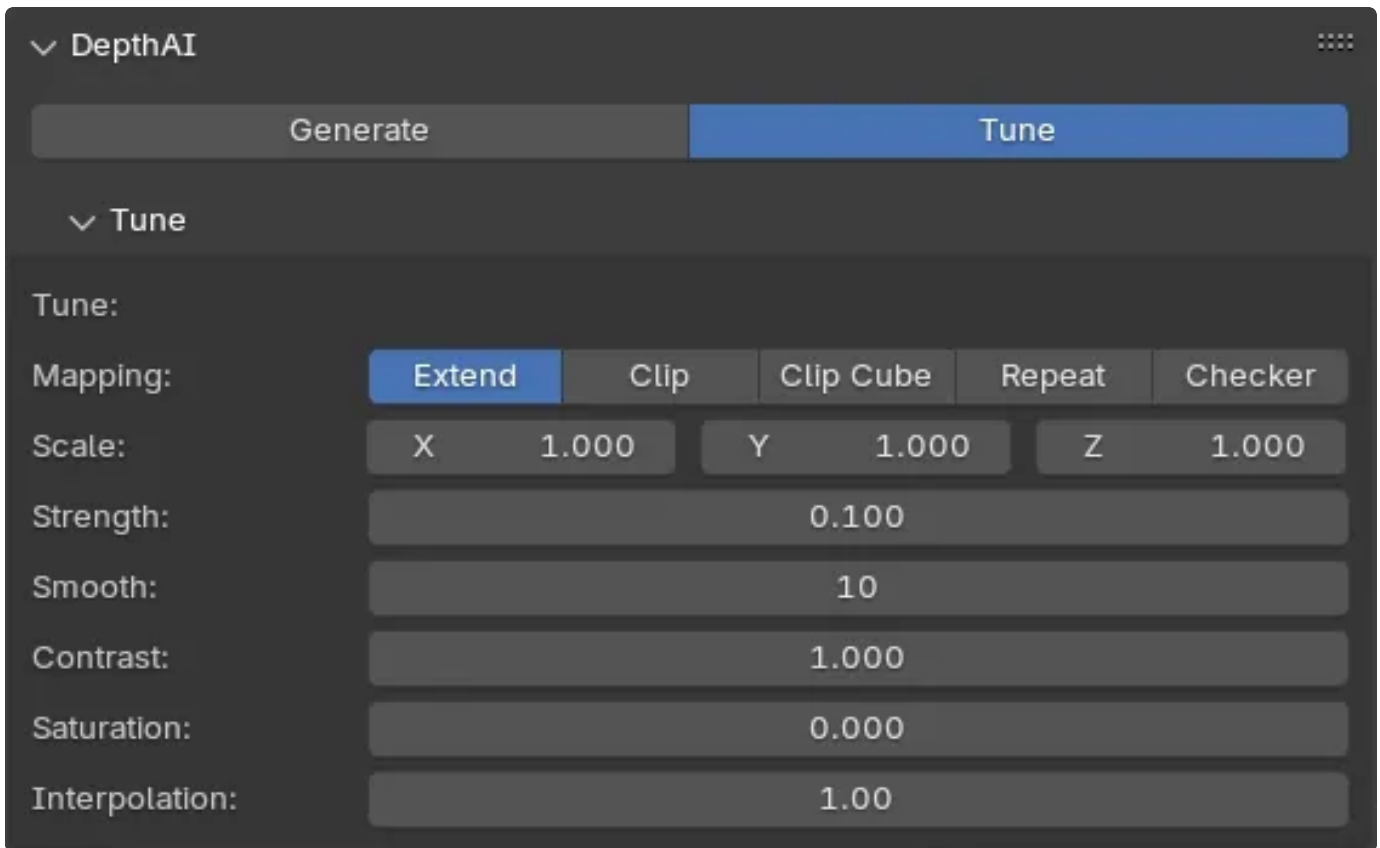
3. **Strength:** Adjust the depth strength; higher values result in a more pronounced depth effect.

4. **Smooth:** Use the slider to adjust the smoothness of the edges.

5. **Contrast:** Adjust the contrast of the generated model.

6. **Interpolation:** Set the interpolation size for the depth map to smooth out changes

7. **Saturation:** Adjust the saturation of colors in the texture, higher values result in more vibrant and intense colors



Panel Overviews and Usage Instructions

Generate Panel

Utilizes depth algorithms to detect content within an image and convert it into realistic 3D shape.

DepthAI

Generate Tune

Generate

Image Path: C:\Users\Administrator.DES...\data\sitting - dog - portrait.jpg

Algorithm: Main Object Full Image

Model Type: yolo mask2former

Result Mode: Separate Blend


Resolution: 1.00

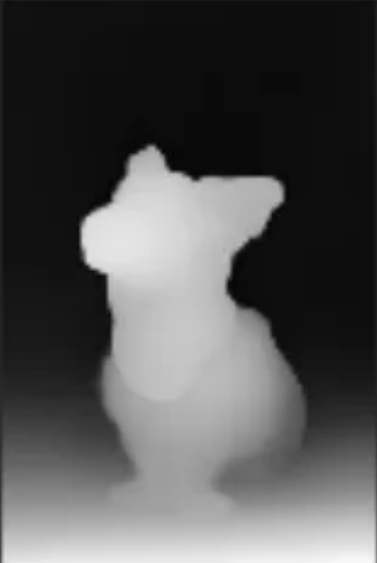
Strength: 0.53

Auto Refine:

Generate

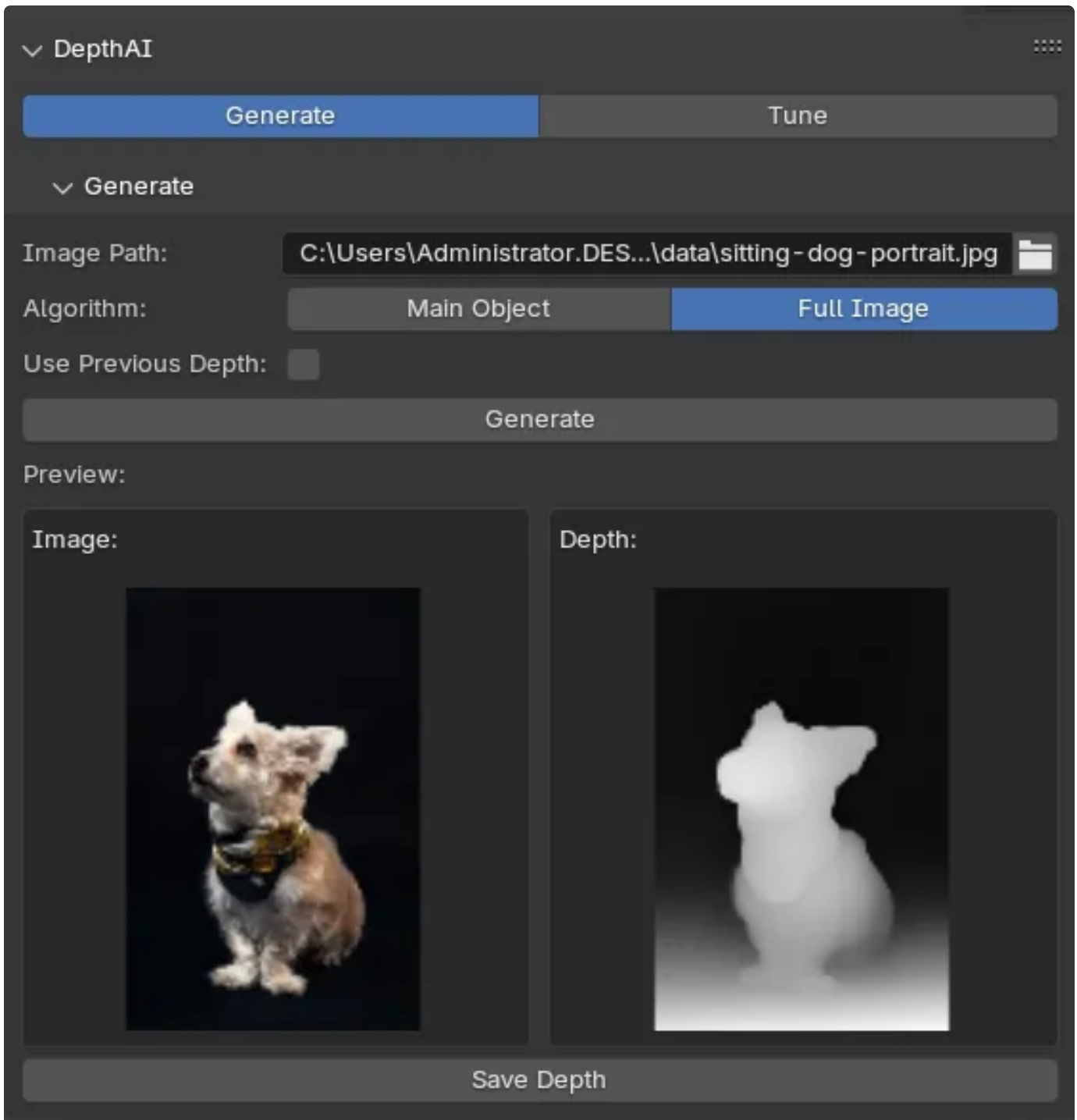
Preview:

Image: 

Depth: 

Save Depth

Main Object Generation



Full Image Generation

Function

1. Main Object Generation

1.1. Model Type: you have two algorithm options

- yolo: Provides fast and accurate detection across various classes
- mask2former:

1.2. Result Mode

- Separate: The algorithm separates the main elements based on the recognized content.
- Blend: Outputs the entire graphic as a single object, informed by the algorithm's recognition of the content.

1.3. Settings

- Resolution: Set the resolution for generating points— higher values result in more vertices.
- Strength: Adjust the depth ratio; higher values create a more pronounced depth effect.
- Auto Refine: Automatically optimizes the vertices.

2. Full Image Generation

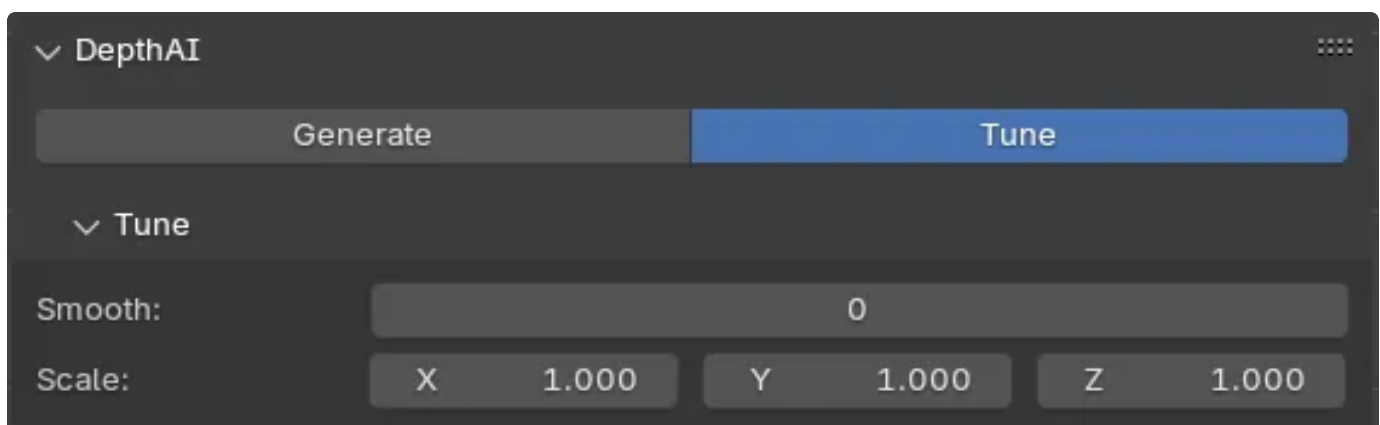
- 2.1. Use Previous Depth: When enabled, you can directly use the previously generated depth map or select a saved depth map from before, allowing for quick regeneration of the model.

Tips

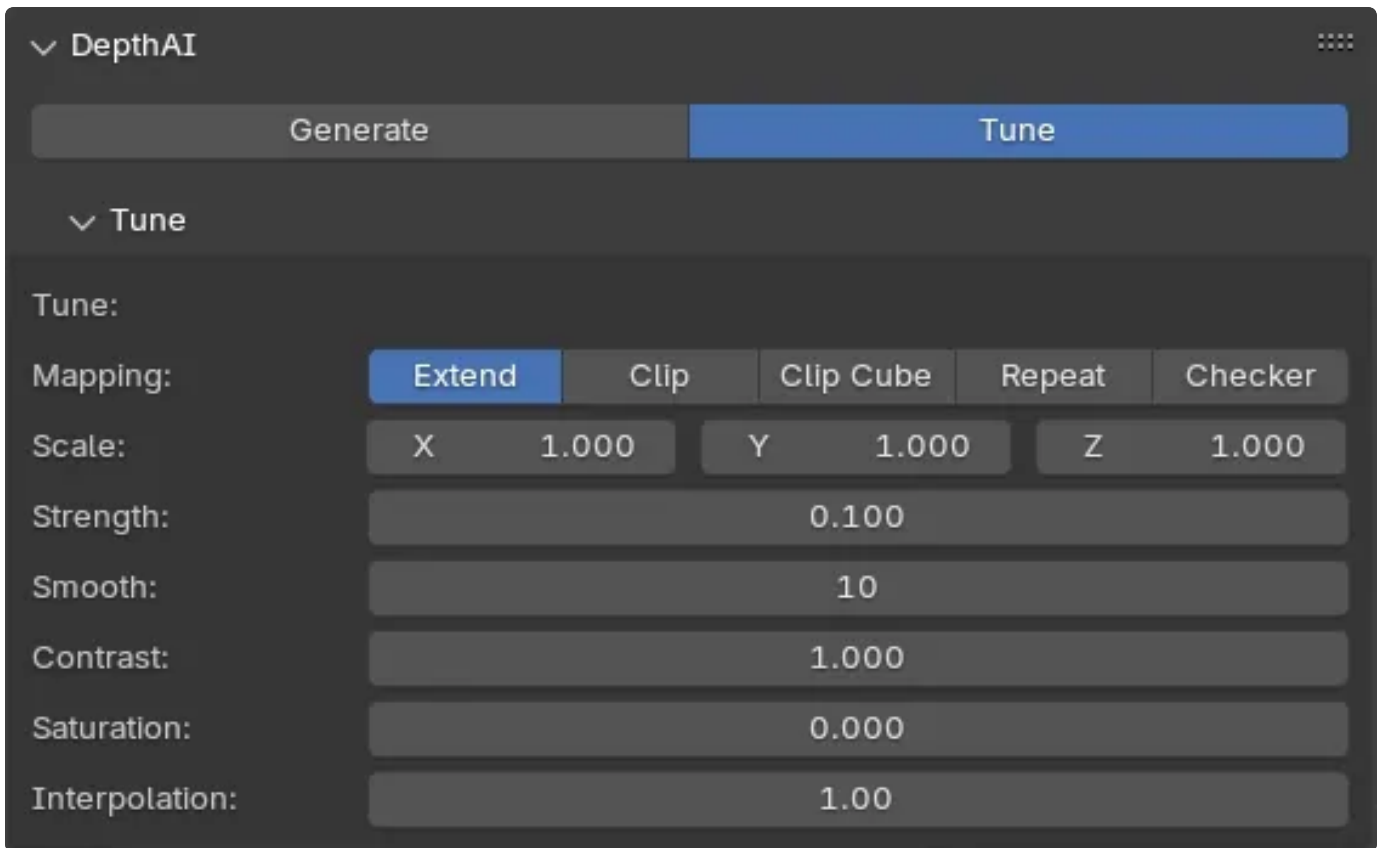
1. Use a higher resolution for detailed objects, but be mindful of increased processing time.
2. If you find yourself generating models frequently, saving depth maps can significantly speed up your workflow.

Tune Panel

The Tune Panel allows you to make precise adjustments to the mesh



Main Object Tuning Panel



Full Image Tuning Panel

Function

1. Main Object

- Smooth: Adjusts the smoothness of the mesh edges, allowing for a more polished appearance.
- Scale: Modify the scaling factors along the X, Y, and Z axes to achieve the desired dimensions of the main object.

2. Full Image

2.1. **Mapping:** Choose the mapping type to define how the depth information is applied

- Extend : Expands the texture mapping beyond the original boundaries
- Clip: Trims the texture mapping to fit within the defined limits
- Clip Cube : Maps the texture within a cubic boundary, limiting the depth to the cube's dimensions.
- Repeat : Repeats the texture mapping across the surface of the mesh.
- Checker : Applies a checkerboard pattern to the mapping for visual contrast.

2.2. **Scale:** Adjust the scaling factors for the entire image; modifies the size of the generated depth map.

2.3. **Strength:** Controls the depth strength; higher values result in a more pronounced depth effect in the final output.

- 2.4. **Smooth:** Applies smoothing to the generated mesh, reducing sharp edges
- 2.5. **Contrast:** Adjusts the contrast of the output, enhancing the visual distinction between light and dark areas
- 2.6. **Interpolation:** Sets the interpolation size for the depth map to smooth out transitions
- 2.7. **Saturation:** Adjusts the color saturation of the texture; higher values result in more vibrant and saturated colors.

Troubleshooting

A Journey Through Challenges

No Model Generated

Imagine you're all set to unveil your creation, but it's nowhere to be found. This could be because your input image lacks sufficient detail or clarity. Try selecting a clearer or more detailed image to see if that sparks some magic. Additionally, consider switching to a different algorithm—sometimes, a fresh approach can reveal hidden details and bring your vision to life!

Long Load Times

Imagine you're excited to preview your model, but it's moving at a snail's pace. If it takes a long time to generate, consider lowering the resolution or switching to a slightly lower-resolution image. Sometimes, less is more!