

# Stable Diffusion for Architects

This document contains three case studies documenting possibilities for using the open-source Stable Diffusion Text-to-Image Generator in architecture.

Since the model is open source, generated images can also be used in commercial applications and since it is deterministic, users have a lot of control over fine-tuning results.

The examples shown in this document are selected to give an impression of the possibilities and not to represent the maximum achievable output quality.

# Visualisation from 3D Sketch

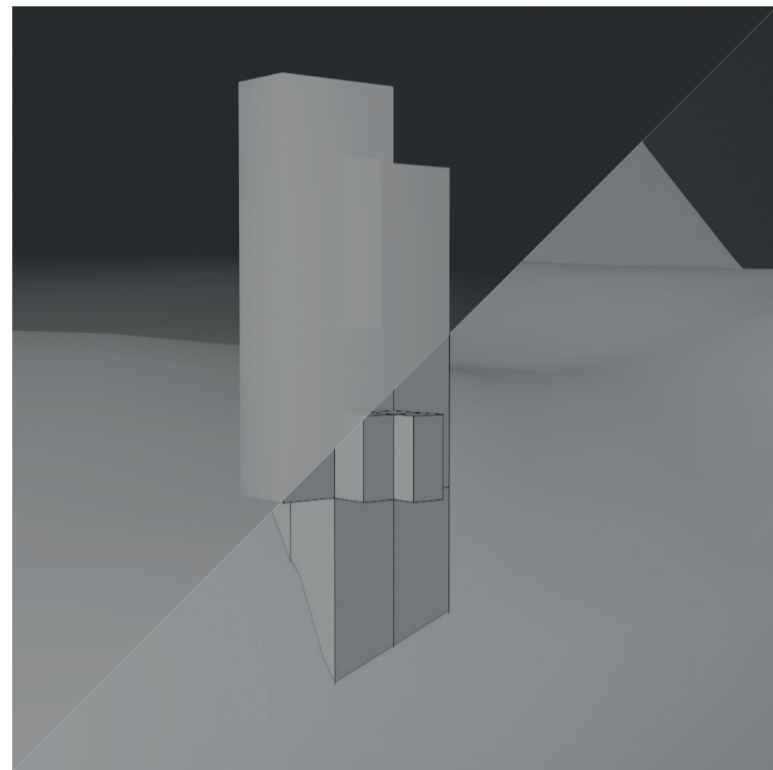
This architectural visualization was created using Stable Diffusion and the ControlNet extension based on a simple 3D sketch.



## Workflow Overview

### 1 3D Sketch in Blender

A quick scene with a volume was created in Blender and rendered as a depth map to be used as a reference.



### 2 Prompt Engineering

A fitting prompt describing the style of the building as well as the landscape surrounding it was iteratively designed.



ControlNets can be used to influence the image generation process.

### 3 Fine-Tuning and Upscaling

One image was selected for further detailing by carefully adjusting the prompt and parameters.



### 4 Upscaling

As a last step, the image is upscaled further to improve detail and resolution without a drastic change in the design.



### Baseline Parameters

|                 |   |
|-----------------|---|
| Model           | absolutereality_v16   |
| Mode            | text2img  |
| Prompt          | architecture photography, modern architecture, (huge modern building on rugged cliff:1.3), ireland shore, (detailed facade:1.25), landscape photography, high quality, 4k, 8k, high resolution, ultra high resolution, intricate detail, detailed texture, LKw9tA7fP1 |
| Negative Prompt | FastNegativeV2, fog, grey   |
| CFG-Scale       | 9   |
| Sampler         | DPM++ 2M Karras   |
| Steps           | 20  |
| Seed            | 633551533   |

# Visualisation from Drawing

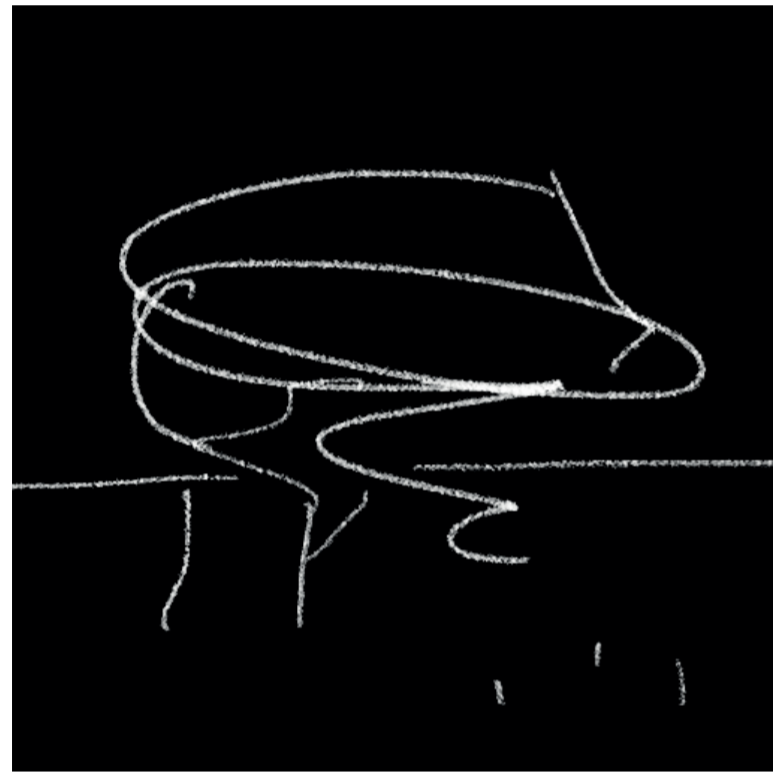
This architectural visualization was created based on a simple drawing using ControlNet for Stable Diffusions txt2img process.



## Workflow Overview

### 1 3D Sketch in Blender

A simple sketch is created in that will be the base for the image generation.



### 2 Prompt Engineering

A fitting prompt describing the style of the building as well as the context was iteratively designed.



With ControlNet various reference methods can be used to influence the image generation.

### 3 Fine-Tuning and Upscaling

One image was selected for further editing and upscaling.



### 4 Upscaling

As a last step, the image is upscaled further to improve detail and resolution without a drastic change in the design.



### Baseline Parameters

|                 |  |
|-----------------|--|
| Model           | epicrealism_pureEvolutionV4  |
| Mode            | txt2img  |
| Prompt          | architecture photography, modern architecture, building in european city, blue sky in the background, futuristic, modern, (plants on facade:1.5), wide angle, 18mm, high quality, 4k, 8k, high resolution, ultra high resolution, intricate detail, detailed texture, LKw9tA7fP1 |
| Negative Prompt | FastNegativeV2   |
| CFG-Scale       | 11   |
| Sampler         | DPM++ SDE Karras   |
| Steps           | 30   |
| Seed            | 3312575780   |

# Visualisation by Inpainting



This architectural visualization was created based on a landscape photograph using Stable Diffusions im2img inpainting process.

## Workflow Overview

### 1 3D Sketch in Blender

Selection of an image that should be the base of the design. Input image quality does affect the result.

### 2 Prompt Engineering

A fitting prompt describing the style of the building as well as the landscape surrounding it was iteratively designed.

### 4 Upscaling

As a last step, the image is upscaled further to improve detail and resolution without a drastic change in the design.



The img2img process also applies the color mood and light of the scene to the images.



### Baseline Parameters

|                 |   |
|-----------------|---|
| Model           | absolutereality_v16-inpainting  |
| Mode            | img2img   |
| Prompt          | architecture photography, modern architecture, (huge modern building on rugged cliff:1.3), ireland shore, (detailed facade:1.25), landscape photography, high quality, 4k, 8k, high resolution, ultra high resolution, intricate detail, detailed texture, LKw9tA7fP1 |
| Negative Prompt | FastNegativeV2  |
| CFG-Scale       | 12  |
| Sampler         | DPM++ 2M Karras   |
| Steps           | 25  |
| Seed            | 2456102969  |