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透過 phi4 生成兩張圖片的漸進過程



WZX

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phi4



左：生成 text1, 右：生成 text2

首先透過 florence-2-large 模型，將圖片轉為具體描述。

```
prompt = '<MORE_DETAILED_CAPTION>'
```

擷取圖片的具體內容，效果如下

```
text1 = f"""
```

```
The image shows a construction site with a large blue tarp covering a building under construction. The tarp is covering the entire wall of the building and is secured with metal scaffolding. There are several palm trees in front of the tarp, and a white fence surrounding the building. The sky is clear and blue, and there are other buildings visible in the background. The image appears to be taken from a low angle, looking up at the construction site.
```

```
"""
```

```
text2 = f"""
```

The image shows an apartment building with multiple floors and balconies. The building is painted in a light beige color and has a white facade. The balconies are arranged in a grid-like pattern and are attached to the building with metal railings. There are palm trees in front of the building and a white fence with a lattice pattern. The sky is blue and there is a street lamp on the right side of the image. The image appears to be taken from a low angle, looking up at the building.

"""

text1 = 圖片顯示的是一個建築工地，
一塊巨大的藍色防水布覆蓋著一棟正在建造的建築物。
防水布覆蓋了整面牆，並用金屬腳手架固定。
防水布前面有幾棵棕櫚樹，建築物周圍有一道白色柵欄。
天空晴朗蔚藍，背景中可以看到其他建築物。
這張照片似乎是從低角度拍攝的，仰視建築工地。

text = 圖片顯示的是一棟多層樓和陽台的公寓大樓。
建築物漆成淺米色，外牆為白色。
陽台呈網格狀排列，用金屬欄桿固定在建築上。
建築前有棕櫚樹，還有一道格子狀的白色柵欄。

STEP

prompt:

```
prompt = f"""
I will give you two sentences representing the description
of two photos. {text1} {text2} What changes do you think
have taken place between the two photos? Please consider
the truth and specific description.
"""
```

phi4:

1. **Construction Progress**:
 - The first image shows a construction site with a building under constructi

2. ****Tarp Removal****:
 - In the first image, there is a blue tarp covering the entire wall of the building.
 3. ****Facade and Color Changes****:
 - The initial description mentions scaffolding on the building under construction.
 4. ****Structural Features****:
 - The second image includes balconies arranged in a grid-like pattern attached to the facade.
 5. ****Street Lighting****:
 - There is no mention of street lighting in the first photo. However, in the second photo, streetlights are visible along the road.
 6. ****Overall Scene Composition****:
 - Both images include palm trees and a white fence with a lattice pattern, indicating a tropical or coastal setting.
- In summary, the primary change between the two photos is the completion of construction, specifically the removal of the tarp and the addition of structural elements like balconies and streetlights.

目前 phi4 生成的是比較偏向「描述變化」的文本，而不是「指令式的修改」。為了生成出可以更適合給 diffusion model 的 prompt，強調指令格式、動詞引導

prompt:

```
prompt = f"""
Given the following descriptions of two images:
First image: {text1}
Second image: {text2}
Generate a step-by-step transformation instruction
that converts the first scene into the second scene.
The instructions should be clear, direct, and actionable
for an image editing model. Use imperative sentences.
"""
```

phi4:

To transform the first image of a construction site into the second image of an

1. ****Remove Construction Elements****:
 - Erase or mask out the large blue tarp covering the wall.

- Remove any metal scaffolding securing the tarp.
- 2. ****Transform Wall to Building Facade****:
 - Replace the exposed construction wall with a facade that matches the light
 - Add architectural details like windows, doors, and decorative elements typ
- 3. ****Add Balconies****:
 - Insert balconies in a grid-like pattern along the sides of the building.
 - Ensure each balcony is equipped with metal railings for safety and aesthet
- 4. ****Modify the Building's Exterior****:
 - Adjust the overall structure to reflect an apartment building, possibly ad
- 5. ****Enhance Surrounding Elements****:
 - Maintain the palm trees in front of the building as they are consistent be
 - Update or enhance the white fence with a lattice pattern similar to that i
- 6. ****Add Street Lamp****:
 - Place a street lamp on the right side of the image, ensuring it aligns wel
- 7. ****Adjust Sky and Background****:
 - Ensure the sky remains clear and blue.
 - Update any visible background buildings to match the style or appearance s
- 8. ****Finalize Perspective****:
 - Confirm that the entire scene is taken from a low angle, looking up at the
- 9. ****Color and Lighting Adjustments****:
 - Match the overall color tone and lighting conditions to those seen in the
 - Ensure shadows and highlights are consistent with an apartment building's
- 10. ****Review and Refine****:
 - Review all elements of the transformed image to ensure they blend seamles
 - Make any final adjustments to enhance realism or correct minor discrepan

By following these instructions, you will transform the first image into a depi

目前 phi4 生成的是一次性的大變化，且為了讓 diffusion model 能夠客製化各個過程的變化

- 時間線上的逐步變化 (不是直接對比最終狀態)
- 真實的施工過程 (讓 phi4 模擬現實中的轉變)

- 10 個獨立的步驟 (分階段呈現變化)

prompt:

```
question = f"""
Given two descriptions of different images:

First image: {text1}
Second image: {text2}

Describe a realistic and gradual transformation process that could have taken place.
Break this process into 10 sequential steps, each representing a logical phase of change.
Ensure the description is realistic, detailed, and applicable to any scenario.
"""
```

phi4:

Transforming the construction site into an apartment building is a multifaceted process involving several key stages:

- 1. Completion of Structural Framework:**
 - The initial stage involves completing the basic structural framework of the building, including the foundation, walls, and roof.
- 2. Removal of Construction Tarp:**
 - Once the main structure is stable, the blue tarp covering the exterior walls is removed, revealing the building's form.
- 3. Exterior Wall Installation and Painting:**
 - Exterior walls are installed, with materials chosen to match the light beige color of the surrounding area.
- 4. Installation of Balconies and Railings:**
 - Metal railings and balcony structures are attached at various points along the exterior walls.
- 5. Interior Development:**
 - Internally, the building undergoes extensive development, including the installation of floors, walls, and ceiling.
- 6. Exterior Detailing:**
 - The exterior receives additional detailing such as window frames, doors, and landscaping.
- 7. Installation of Street Lamp and Finalizing Fencing:**
 - A street lamp is installed near the entrance on one side of the building.
- 8. Completion of Landscaping:**
 - Landscaping efforts are finalized by planting more palm trees and perhaps some smaller plants.

8. ****Completion of Landscaping:****

- Landscaping efforts are finalized by planting more palm trees and perhaps
- Landscaping efforts are finalized by planting more palm trees and perhaps
nt areas.

9. ****Safety Inspections and Final Touches:****

- The building undergoes a series of safety inspections to ensure all elemen

10. ****Occupancy Preparation:****

- Once construction is officially complete and the building passes inspecti

Through these progressive steps, the construction site gradually transforms into

規定 phi4 產生特定格式，以 JSON 或者特定標準格式輸出用以轉成列表 (list) 包含多個字典 (dict) 作為diffusion model 的輸入

prompt:

```
prompt= f"""
Given two image descriptions:

First image: {text1}
Second image: {text2}

Describe a **gradual, step-by-step visual transformation** of the scene from the
- Focus only on **visible changes** that can be observed in the images.
- Ignore construction techniques, planning, or non-visible details.
- Ensure the transition occurs smoothly in **10 sequential steps**, where each

IMPORTANT: Please output the response as a **valid JSON list** with the following
[
    {"step": 1, "title": "Step Title", "description": "Detailed explanation of
    {"step": 2, "title": "Step Title", "description": "Detailed explanation of
    ...
]

DO NOT include extra text outside of this JSON format.
"""
```

phi4:

Step 1: Tarp Begins to Lift

- The large blue tarp starts to be partially lifted from the building's wall,

Step 2: Tarp Fully Removed

- The blue tarp is completely removed, exposing more of the building's facade

Step 3: Scaffolding Starts to Disappear

- The metal scaffolding is partially dismantled, allowing more of the building

Step 4: Facade Painting Begins

- Workers begin painting the exposed facade a light beige color, transforming

Step 5: Windows and Doors Installation

- The installation of windows and doors progresses, giving shape to what will

Step 6: Scaffolding Completely Removed

- The scaffolding is fully dismantled and removed from around the building, l

Step 7: Balcony Framework Appears

- The framework for balconies becomes visible, appearing as metal beams and s

Step 8: Balcony Railings Installed

- Metal railings are installed along each balcony level, giving them shape an

Step 9: Street Lamp Added

- A street lamp is installed on the right side of the building, adding to the

Step 10: Final Touches Complete

- The transformation from construction site to finished apartment building is

最終格式

```
[
  {
    "step": 1,
    "title": "Tarp Reconfiguration",
    "description": "The large blue tarp covering the entire wall of the bui
  },
  {
```

```
[
  {
    "step": 2,
    "title": "Wall Development",
    "description": "As more of the blue tarp is retracted, the walls beneath it begin to rise, forming a more defined structure."
  },
  {
    "step": 3,
    "title": "Facade Formation",
    "description": "The wall continues to rise as more tarp is retracted and the facade becomes more visible."
  },
  {
    "step": 4,
    "title": "Balcony Addition",
    "description": "As the facade becomes more defined, protruding platforms or balconies start to appear on the upper levels."
  },
  {
    "step": 5,
    "title": "Palm Trees and Fence Adjustment",
    "description": "The palm trees in front of the construction site begin to shift slightly, and the fence line becomes more organized."
  },
  {
    "step": 6,
    "title": "Completion of Building Height",
    "description": "The entire facade and balconies continue their development, reaching a more complete height."
  },
  {
    "step": 7,
    "title": "Sky and Background",
    "description": "The sky remains clear and blue throughout, with no significant changes in the background."
  },
  {
    "step": 8,
    "title": "Street Lamp Installation",
    "description": "A street lamp appears on the right side of the image, giving a sense of scale and location."
  },
  {
    "step": 9,
    "title": "Final Touches",
    "description": "The last adjustments occur with minor details: the fence is fully in place, and the overall scene is refined."
  },
  {
    "step": 10,
    "title": "Final Scene",
    "description": "The entire image now fully resembles the second description, showing a completed building facade with balconies, palm trees, a street lamp, and a clear sky."
  }
]
```

Phi 4

Prompt

Florence