

Exploring Prompting Techniques for AI Video Generation

Aim

The aim of this experiment is to explore various prompting techniques for generating videos using AI models. The focus is on understanding how different prompt structures—such as simple versus detailed prompts—affect the quality, coherence, and style of the generated videos.

Software and Tools Required

1. **Python 3.8+** and an IDE (e.g., Jupyter, VS Code).
2. **Libraries:**
 - requests for API interaction.
 - moviepy for video editing (optional for enhancing or combining outputs).
3. **APIs and Tools:**
 - **RunwayML** or **DeepMotion** for animation generation.
 - **Hugging Face** (Stable Diffusion for image/video models).
 - **OpenAI GPT** for narrative and prompt refinement.
 - **Synthesia.io** or **Pictory** for creating AI-generated videos with text-to-video tools.

Experiment Design

Experiment 1: Generating Animated Scenes

- **Objective:** Use different prompt styles to generate short animations based on scene descriptions.
- **Prompts:**
 - **Basic:** "Generate a cartoon of a cat chasing a mouse."
 - **Detailed:** "Create a 2D animation of a playful orange tabby cat chasing a gray mouse in a sunny green field."

- **Contextual:** "Produce an animation where a cat and mouse chase each other through a vibrant forest during autumn."

Code:

python

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import requests

```
def generate_animation(prompt):
    API_KEY = "your_runwayml_api_key"
    url = "https://api.runwayml.com/v1/videos"
    headers = {"Authorization": f"Bearer {API_KEY}"}
    payload = {"text_prompt": prompt, "model": "animation"}
    response = requests.post(url, headers=headers, json=payload)
    if response.status_code == 200:
        print("Generated animation URL:", response.json().get("video_url"))
    else:
        print("Error:", response.json())

# Example usage
generate_animation("Create an animation of a robot exploring Mars.")
```

Experiment 2: Generating Video Summaries

- **Objective:** Explore how prompt specificity affects the generation of video summaries from text or long videos.
- **Prompts:**
 - **Simple:** "Summarize a video about AI applications."
 - **Detailed:** "Generate a 2-minute video summarizing AI's use in healthcare, focusing on diagnosis and treatment."
 - **Contextual:** "Create a video summary of a 10-minute lecture on climate change, highlighting solutions for reducing carbon emissions."

Code:

python

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```
def generate_video_summary(text_prompt):
    API_KEY = "your_huggingface_api_key"
    url = "https://api-inference.huggingface.co/models/video-summary-model"
    headers = {"Authorization": f"Bearer {API_KEY}"}
    payload = {"inputs": text_prompt}
    response = requests.post(url, headers=headers, json=payload)
    if response.status_code == 200:
        print("Generated video summary:", response.json().get("video_url"))
    else:
        print("Error:", response.json())

# Example usage
generate_video_summary("Create a video summarizing AI in autonomous vehicles.")
```

Experiment 3: Enhancing Video Content with Visual Effects

- **Objective:** Test how descriptive prompts influence the generation of visual effects for existing videos.
- **Prompts:**
 - **Basic:** "Add fireworks to this video."
 - **Detailed:** "Overlay realistic fireworks in the night sky during the final scene of this video."
 - **Contextual:** "Add vibrant, sparkling fireworks over the Eiffel Tower at midnight."

Code:

python

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```
import moviepy.editor as mp
```

```
def add_effects_to_video(video_path, output_path):
```

```
    # Placeholder for actual AI effects logic
```

```
    print(f"Adding effects to {video_path}. Output will be saved to {output_path}.")
```

```
# Example usage
```

```
add_effects_to_video("input_video.mp4", "output_with_effects.mp4")
```

For actual AI-based enhancements, integrate with video-effect models like **RunwayML** or **DeepMotion**.

Output and Results

1. **Animated Scenes:**

- Basic prompts produce generic animations.
- Detailed prompts create engaging, visually rich content.

2. **Video Summaries:**

- Contextual prompts lead to summaries with better focus and flow.

3. **Visual Effects:**

- Adding detailed prompts improves the realism and integration of effects.