In [1]:
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### Python Code to Subsample an Image


from PIL import Image
import numpy as np
import matplotlib.pyplot as plt

# Open the image using PIL
image = Image.open('tiger_image.jpeg')

# Convert the image to a numpy array
image_array = np.array(image)

# Function to perform subsampling (e.g., 2x2 subsample to reduce size by 2)
def subsample_image(image_array, factor=2):
    height, width, channels = image_array.shape
    new_height = height // factor
    new_width = width // factor

    # Resizing the image using slicing to downsample
    subsampled_image = image_array[:new_height*factor:factor, :new_width*factor:factor]
    return subsampled_image

# Perform subsampling
subsampled_image = subsample_image(image_array)

# Convert back to PIL Image for displaying
subsampled_image_pil = Image.fromarray(subsampled_image)

# Show the original and subsampled images side by side
fig, ax = plt.subplots(1, 2, figsize=(10, 5))

# Display the original image
ax[0].imshow(image)
ax[0].set_title("Original Image")
ax[0].axis('off')

# Display the subsampled image
ax[1].imshow(subsampled_image_pil)
ax[1].set_title("Subsampled Image")
ax[1].axis('off')
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plt.show()
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