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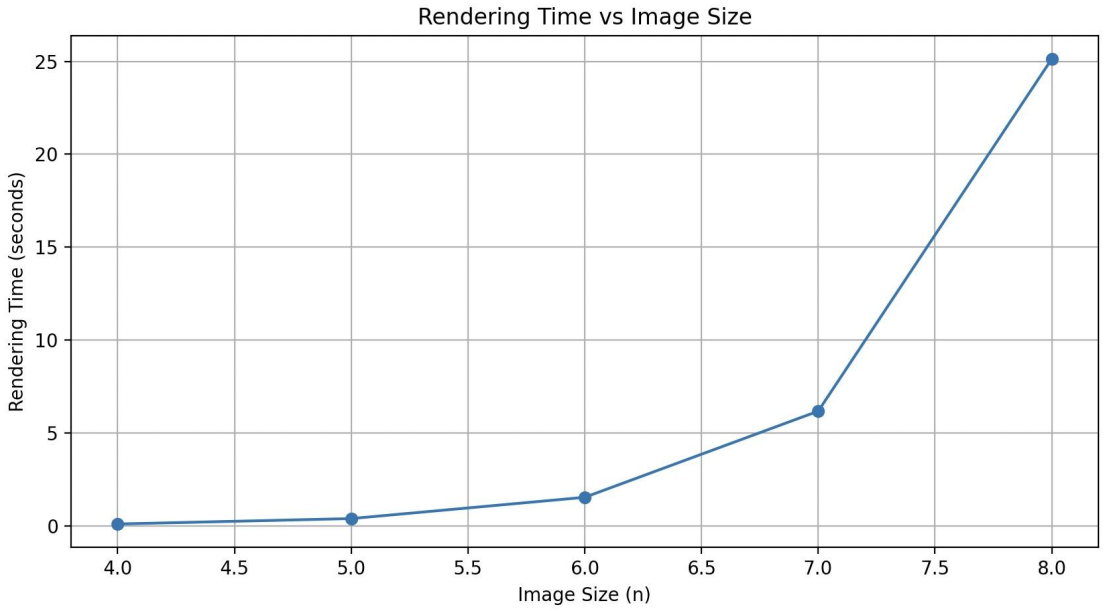
Lab 3 Task 3 Writeup

This plot was generated by first returning the elapsed time in the render_scene function and then creating a new function called “time_size” that takes in all of the same inputs as the render_scene function with the addition of the parameter “n” which will be used to generate images of 2^n x 2^n pixels, where “n” is incremented a specified number of times. The IMAGE_WIDTH_HEIGHT constant is then changed to 2^n x 2^n for the given value of “n”. The time_size function then calls the render_scene function to return the time taken to generate the image. This time_size function is then called multiple times for increasing values of “n” whose times are appended to a list of times. This list of times is then used to create a plot with rendering time as a function of “n”.




```python
def time_size(n, shape, method, cdfunc, nfunc, color):
    global IMAGE_WIDTH_HEIGHT
    IMAGE_WIDTH_HEIGHT = (2**n, 2**n)
    time_elapsed = render_scene(shape, method, cdfunc, nfunc, color)
    return time_elapsed

# Collect data
times = []
ns = range(4, 9)
for n in ns:
    elapsed_time = time_size(n, 'sphere', 'trace', sphere_coeffs, sphere_normal, vec3(1, 0.5, 0))
    times.append(elapsed_time)
```