**Low and high frequencies in an image**

<https://www.quora.com/What-are-the-low-and-high-frequencies-in-an-image>

Sharp contrast edges are high frequencies, smooth gradients are low frequencies.

A flat, single colour image would have the lowest frequency. An image with a black and white checkerboard pattern at the pixel level would have the highest frequency.

Small sharp textures/details are like tiny high frequency ripples in a pond. Smooth gradients are like huge low frequency ocean swells.

**Fourier spectrum of an image**

<https://stackoverflow.com/questions/43029277/fourier-spectrum-of-an-image>

1. Integrated magnitude should correspond to image integrated magnitude. Hence more bright image has bigger magnitudes.
2. The smaller the detail the higher the frequencies have bigger magnitudes (black space is also detail)
3. position do not affect frequencies so much but the amplitude distribution instead
4. rotation rotates also the frequency domain but centered on the wrapped center or the 4 corners in unwrapped images
5. sharp non periodic edged detail provide many frequencies
6. smooth periodic shapes provide fewer frequencies response

<https://www.itread01.com/content/1546988055.html>

<https://vovkos.github.io/doxyrest-showcase/opencv/sphinxdoc/page_tutorial_py_fourier_transform.html>

