

FFT and image compression:

Consider an image that is 10×10 pixels
where each pixel can be black or white.

How many possible images are there?

answer: $2^{100} \approx 10^{30}$

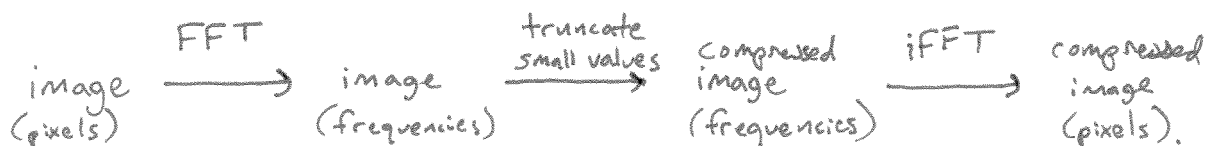
(more possible black & white 10×10 images than
stars in the known universe)

How can this be? The vast majority of
random images will look like TV static.

(more 20×20 BW images than atoms in the known universe!)

Therefore, natural images (i.e., people, mountains, city skapes)
occupy a miniscule fraction of all
image space.

This is the basis of image compression!



Note: iFFT is FFT^{-1} , not Apple™'s FFT...

Other cool facts: ~~XXXXXXXXXX~~

- Complex textures are among the most difficult to compress
 - hair, fur, grass...
 - challenge for Pixar animation.
explains Toy story (plastic skin = easy).
- Larger images are more compressible
 - occupy a smaller corner of a larger image space.