3/ Discrete 2D Fourier transform

$$F(v_i, v_j) = \sum_j \sum_i f(x_i, y_j) e^{-i(ux+vy)}$$

sampled frequency — sampled points

gives magnitude (size)
a phase (time)

properties? shift invariance (of magnitude)
rotates with image
scales with 1/scaling.

applications? speed up algorithms
coding & filtering
analysis (e.g gait/texture)
invariance (above).

Image sampling & the Fourier transform

49–71

0). Fourier transform = real + j × imaginary

= mag + phase

1. sampling? high = good bt many points
low = could be bad fewer points

2. Nyquist's sampling theorem.

uses Fourier

high sampling rate ⇒ spectra separate

good " " " " touch

low " " " " collide

sampling rate = 2 × max frequency

speech max 6kHz. Sample @ 12kHz

images? digital? take two points/
vector of interest.