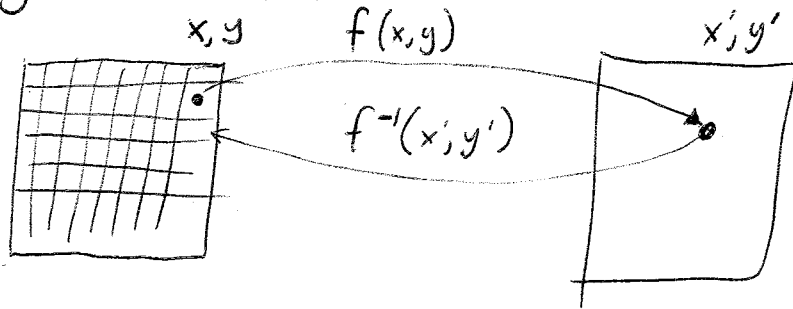


TUESDAY LECTURE

9/22

Generalized Re Sampling

Using Little Square Model (math is less neat, but intuitions are good)



Scaling $x', y' = (s_x x, s_y y)$

Point samples \rightarrow point samples

Little squares (or other areas)

Square in 1 = square in other

Scale up ($s=3$) 1 src square = 9 dst square

Scale down ($s=\frac{1}{3}$) 1 dst square = 9 src squares

Might not overlap perfectly $\frac{1}{4}$ ths

Some Algorithms

Forward (splat)

how to avoid holes?

how to deal w/ many to 1?

Reverse

need

f^-

need

interpolation

need

sum over area

(pre-filtering)

If separable - do it that way!

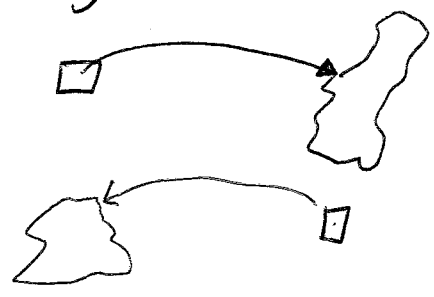
(can actually separate lots of things

scale \Rightarrow scale X, scale Y

any ~~linear~~^{affine} transform (rotation) \Rightarrow shear X, shear Y

\leftarrow overkill for assignment

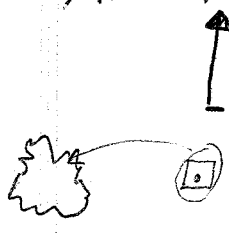
Arbitrary $f(x,y)$



anisotropic - longer in 1 dimension than the other
non-linear - may have a funny shape
spatially varying - different at different parts of the image

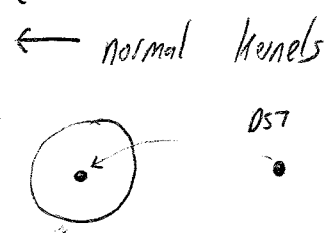
Splattting (amount accumulation / normalization)

Area Averaging



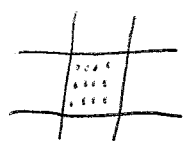
see that

assume simple shape
circle / ellipse
shape in source



Super Sampling

lots of points
 \uparrow
Average together



equivalent \rightarrow make big image and downsample
(but easy downsampling)

9/22 -3

Splattng for Painting

Forward Splats w/ Artistic Shape
Brush Stroke
Paint by Numbers

Easy improvements

Randomized Strokes | / ~

randomized color

Edges on strokes (top is light / bottom is dark)

Harder improvements - Adapt to image

stay in lines (clip strokes to boundaries)

draw edges

easy version - edge \approx high frequencies

add small dots where there are HF

↑ don't do too much, or won't look painted!