MipMap Example

Image pyramid.

Linear

Nearest

texel lookup

Linear

MipMap

Nearest

pyramid level lookup

Linear

Nearest

8x8 MipMap

L_0
A=1

L_1
A=4

L_2
A=16

L_3
A=64

da in original texels

e.g.

Linear MipMap Nearest

Use nearest pyramid level

e.g. if pixel footprint area is A = 9

A = 9

A = 4

A = 16

Linearly interpolate between two pyramid levels.

e.g.

Nearest MipMap Linear

Linear MipMap Linear

Lookup nearest texel within a pyramid level

Linearly interpolate between two pyramid levels.
Aliasing Example

40% white

sample pixel centers
pixel average "box filter"
stripes checkerboard period = 1.2
better filter

Anisotropic Filtering

area weighted averaging improves the result, but aliasing remains.

image space

object & texture space