Information Coding / Computer Graphics, ISY, LiTH

TNM084
Procedural images

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Lecture 5

A bit more on anti-aliasing

Open Shading Language

Using OSL with Blender

Lab 2

Lecture questions

1: How can you pass input values to an OSL shader?

2: What is the difference between shaders in GLSL and OSL?

3: What renderer do you have to use in order to use OSL?

4: How do you get noise in OSL? (Two different ways!)

The duggas: Rules for the retake

You have a second chance!

You can do all or some.

Not same questions but similar.

You can *not* lower your points! Best result counts!

Lab 1

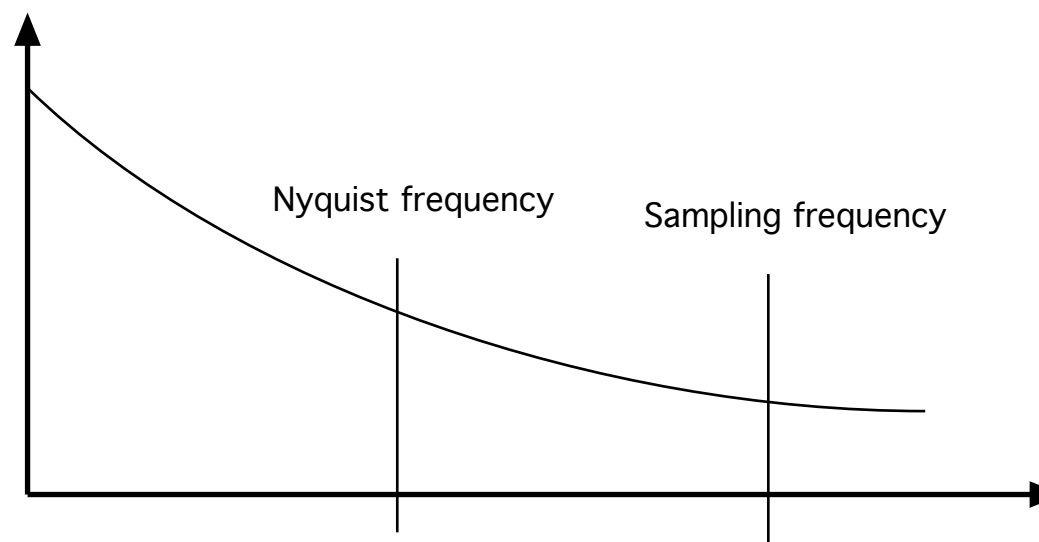How interesting shapes and animations did yoiu get?

Did you get something way beyond the plain noise?

This will be relevant in Lab 2 as well.

The Nyquist frequency

For sampled signals, the signal is only correctly represented up to half the sampling frequency, N
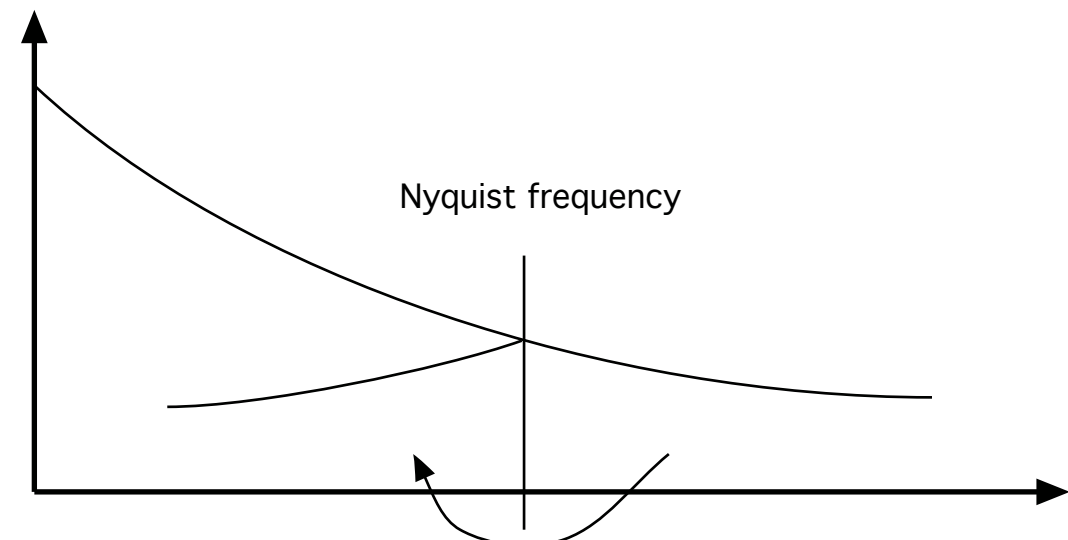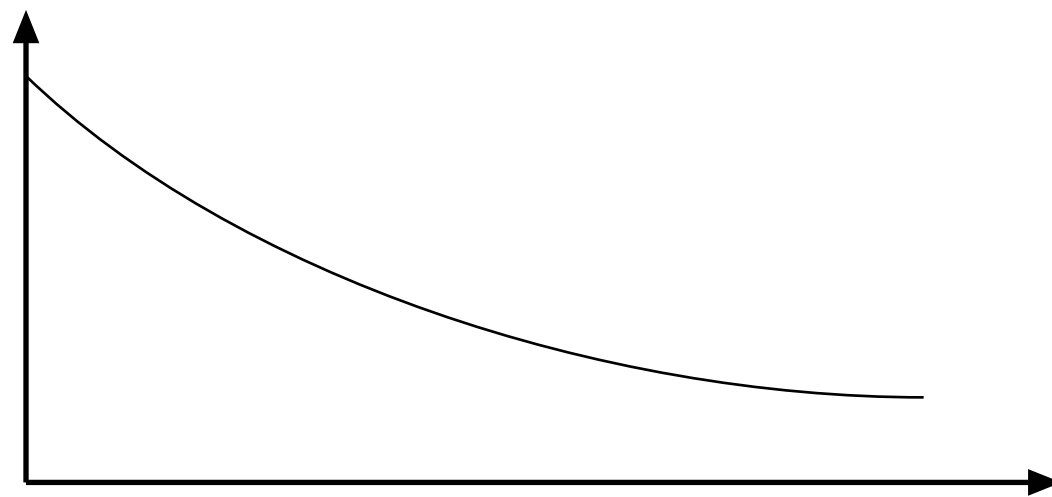
Folding over Nyquist

Errors have highest magnitude right above the Nyquist frequency. Errors are folded down into
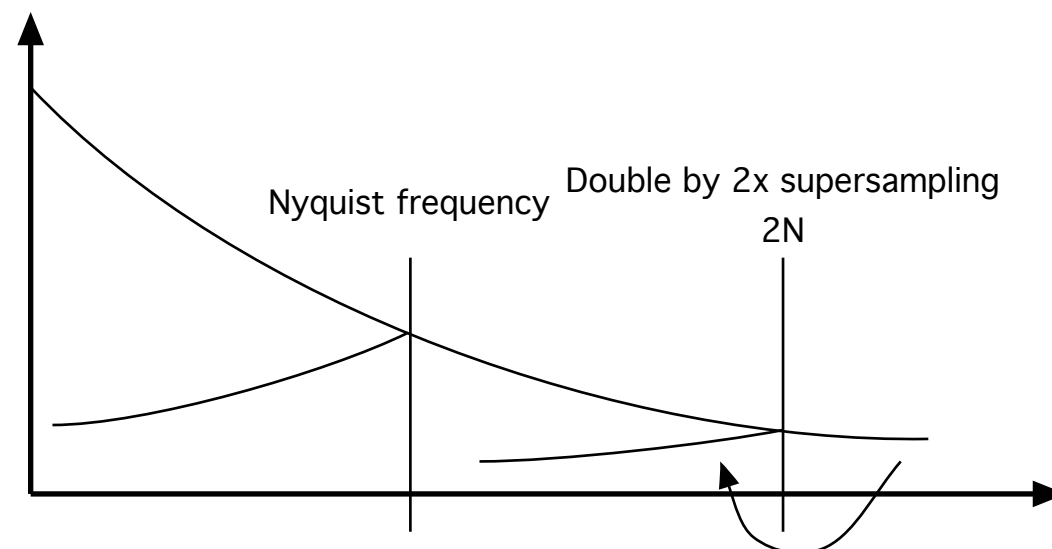
$$f' = -(f-N) + N = 2N-f$$

Nyquist frequency

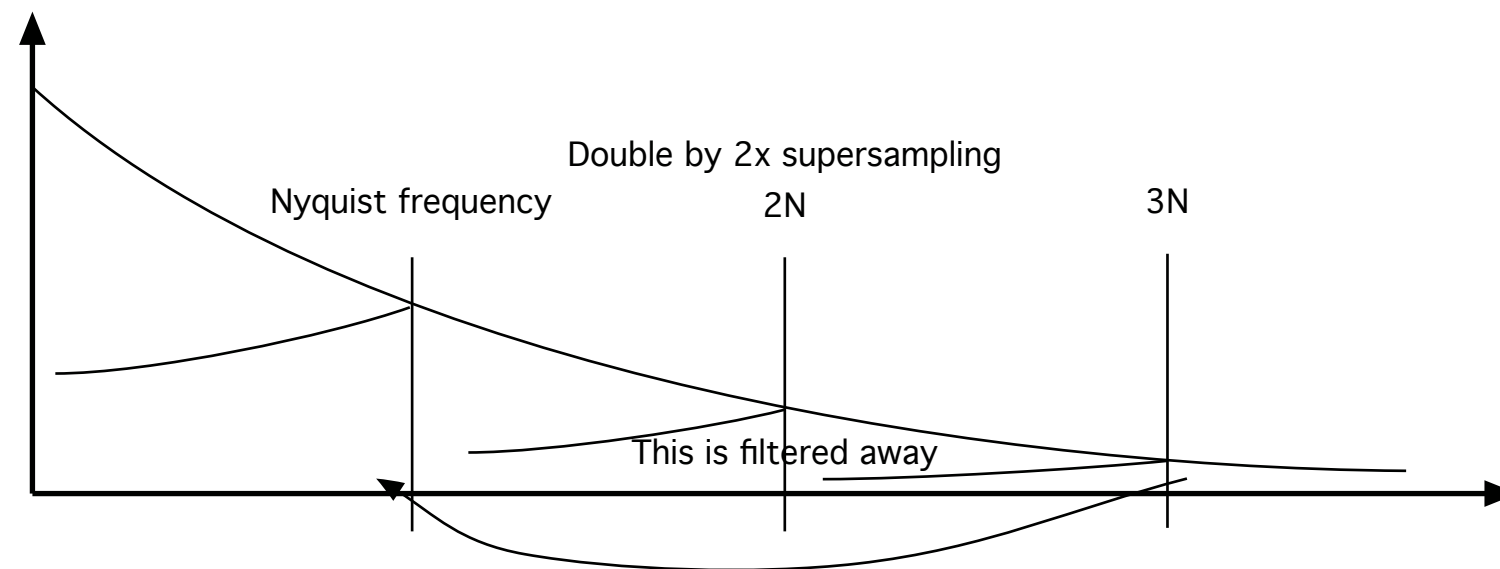Aliasing caused by frequencies mirrored over the Nyquist frequency!

Relevance for supersampling

The 1/f rule: Double the sampling frequency = Half the error magnitude

Nyquist frequency   Double by 2x supersampling

2N

Downsampling

But then you downsample! And things get even better! Approximately 1/3 of the magnitude!

So what happens for 3x supersampling?

Example: The "maskros" image

Natural images have, approximately, a frequency contents that vary by 1/f

We will see this coming back later in the course, with FBM, Fractal Brownian Motion.