Anti-aliasing

![Diagram of anti-aliasing process]

Super-sampling

-one pixel

standard

super-sampling

multiple rays per pixel
regular - still make patterns

random, but not as even coverage

jittered

→ random in sub-pixel area (bird)
good compromise
Soft shadows / area lights

* Shoot ray to randomly chosen location in light
* Possibly shoot multiple rays to light
Fuzzy Reflections

randomly perturb reflected direction
triangle mesh → 4K → 1M triangles

\[ 1024 \times 1024 \text{ image} \]

\[ = 10^9 - 10^{12} \]

= lots of waiting

(× 16 super-sampling
× reflection rays,
× 5 lights
× multiple light rays for area lights, etc)

SLOW!

× must speed this up

→ acceleration structures

Ray cannot possibly intersect object – no need to intersect with all those triangles
bounding box hierarchy

traverse tree, prune paths
reduce intersections required

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each cell stores list of objects touching it

only test objects touching x cells

* the march through cells in order
ray hits them, stop when intersection found

→ line rasterization!