CS448f: Image Processing For Photography and Vision

Tone Mapping

So far

Photography

Mis focus
⌐ blurry

Lens Distortion
⌐ blurry
⌐ warped

Not enough light
⌐ Motion blur
⌐ Noisy

Too much dynamic range
⌐ under or over saturation

Composition

So far

Tone Mapping

- Some Images have too much dynamic range to display on a slide:

- (belgium.hdr)

Recall Sharpening

Input

=

Coarse   +   Fine

Tone Mapping

Input

=

Coarse   +   Fine

Tone Mapping

Output

=

Coarse + Fine

Tone Mapping

Output

=

Coarse + (Fine)

Tons of strong detail in the bright regions, not enough in the dark regions

Tone Mapping

Input

=

Coarse   x   Fine

Tone Mapping

Log(Input)

=

Log(Coarse)   +   Log(Fine)

Tone Mapping

Log(Output)

=

Log(Coarse) + Log(Fine)

How should we make the coarse layer?

Input

Coarse
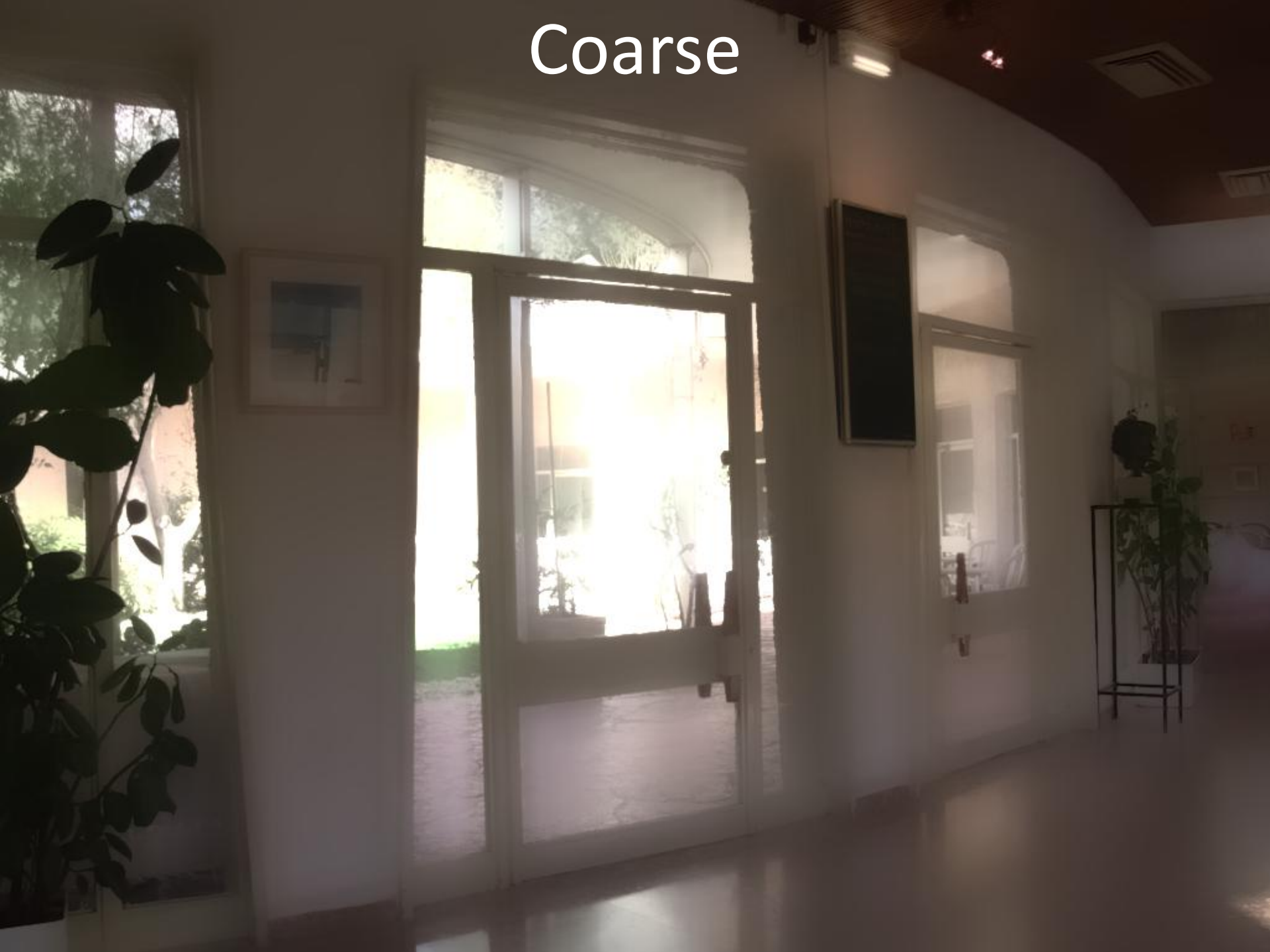
Fine

Input

Exp(Log(Coarse)*0.7 + Log(Detail))

Exp(Log(Coarse)*0.5 + Log(Detail))

Exp(Log(Coarse)*0.3 + Log(Detail))

Conclusion:

- You can use a bilateral for tonemapping
- It's highly parameter-sensitive
- Results aren't great
- What's better?
  - Not much.