Bilateral filtering

We can also change the filter to something “nicer” like Gaussian:

Recall that convolution looked like this:

\[ g[i] = \sum_{l} f[l] p[i-l] \]

Bilateral filter is similar, but includes both range and domain filtering:

\[ g[i] = \frac{1}{C} \sum_{l} f[l] h_{\sigma_{r}}[i-l] h_{\sigma_{d}}[f[i] - f(l)] \]

and you have to normalize as you go:

\[ C = \sum_{l} h_{\sigma_{r}}[i-l] h_{\sigma_{d}}[f(l) - f(i)] \]