INFOIBV P3 Report

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Variables short names

Threshold over image = iT, Minimum length lines = mL, Maximum gap = mG, Peaking threshold = pT, Edge threshold = eT

Finding lines with binary images

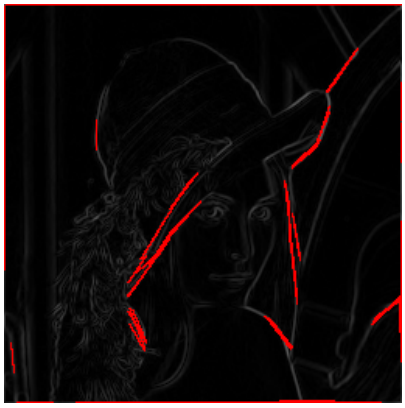
1: iT = 40, mL = 20, mG = 5, pT= 20%

2: iT = 20, mL = 30, mG = 2, pT= 40%

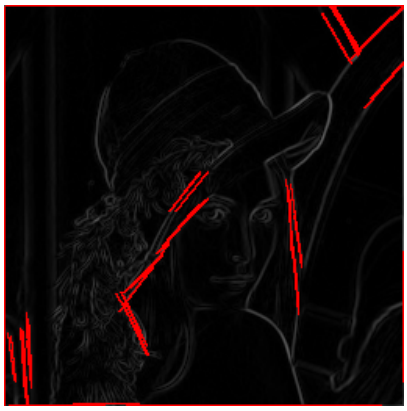
3: iT = 10, mL = 150, mG = 10, pT= 90%

In the images above we can see binary images with a hough line detection. The hough line detection has some parameters and we changed them around. Also the initial image has a threshold parameter that also was changed. All these images have a red border around them. This is probably because the edge detection on the original image did something weird. And gave it a border with high white values. Just assume that it is part of the image. Now which image has the best parameters for line detection in images? Image 1 has a high iT which means that it is more about the foreground pixels and with a low mL it also draws shorter lines. It also has a mG of 5 which means it can't draw long lines between foreground pixels that are far away from each other.The pT is really low so it also draws lines that are maybe less important. The lines in image 1 are kind of an outline of this person figure and the hat. In image 2 the iT is higher so the hat has its feathers which makes the weight heavily towards that(because every pixel has the same strength). However the mG of 2 makes it not possible to draw lines there. The lines in image 2 are very similar to image 1 except it draws the background beam. Image 3 looks chaotic. This is because the parameters are very different from the first 2 images. It has a really low iT so a lot of background. Only long lines that can pass over a large background area. Here we can see the weight of the feathers in action because all the lines are in that area(also with high pT). To choose the best 1 is hard. It depends on the image in this image the weight of the feathers is heavy. So foreground without the feather is good. Then it depends on how general you want the lines to be(only the big lines with large gaps). In 3 it is general and in 1 and 2 it isn't. My preference is small lines. So with these things in mind 1 is the best.

Finding lines with edge strength images



4: eT = 40, mL = 20, mG = 5, pT= 80%



5: eT = 20, mL = 30, mG = 2, pT= 80%

3: eT = 10, mL = 150, mG = 15, pT= 90%

In the images above we can see edge strength images with a hough line detection. These images are similar to the binary except the weight automatically goes to the edge with the highest strength. The parameters of these images are nearly the same as the first 3 images. The only thing that changed is the pT which is way higher than the binary images. This is because it is more sensitive here. Now which of these 3 images is the best? Similar to my explanation at the binary images. My preference is less general lines. Both images 1 and 2 are fine. The difference is that image 2 has lines in the left bottom corner and in the top right. While image 1 has more lines on the person. I prefer image 2 because it highlights more lines.

Differences between binary and edge strength images

The difference between these 2 methods is that the strength of the foreground is in the edge strength method while it isn't in the binary. This is kind of highlighted in images 3 and 6 because 6 prefers drawing these general lines near the strong edges. While image 3 draws some background lines. In image 6 there are also lines that go sharper down then in image 3. This is because in image 6 it goes more towards those strong edges. Also the pT is way lower in the binary images because those border lines are really strong there(otherwise it would only draw the border lines). While in the edge strength images it was less of a problem.