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Chosen chapters – computational imaging TP2

(1)

First off, the method used for depth estimation is quite slow, it would be in our interest to parallelize the algorithm where it is possible and use GPU computations rather than the CPU.

Looking at the quality overall, one can be quite satisfied with the end result, the one place where it is disappointing is the edges, as there is quite some noise, this is due to the algorithm that is used, it would probably be good to explore other algorithms that would be able to fix this edge noise. This effect could even be fixed by adding a filtering step at the end of the current computation.

(2)

(Shift sum refocus)

This technique allows us to change the distance of focus in the image, the goal being to take a single picture that is a sum of different focused depths, each sub image is very detailed in its corresponding depth, the sum of all sub images results in a perfectly focused imaged.

(Selective refocus)

Here, we create a dully focused image, by focusing on each object at a single time, then adding all the sub images together.

In the first method, one creates a completely focused image, by summing the different depth focused sub images. Whereas in the second technique, one creates a focused image by adding together the different focused areas/objects (rather than depth).

This second technique can be better because the same object can be at different depths, if it is at an angle, this means that at each selectin we perfectly focus an object not taking into account its depth or orientation.