3D computer vision

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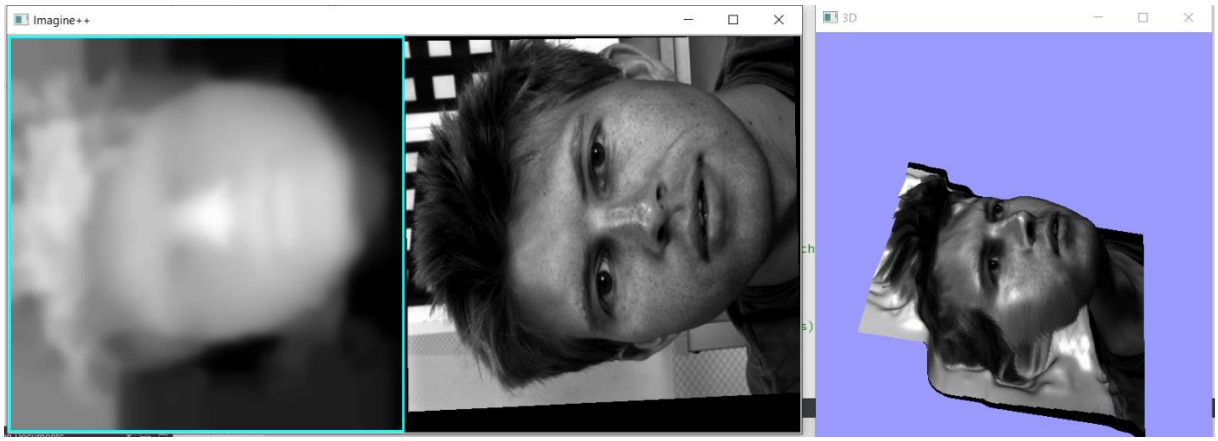

Figure 1: Blurred disparity map, initial image, 3D mask (lambda=0.1, win=3)

Change the importance of regularization (parameter lambda)

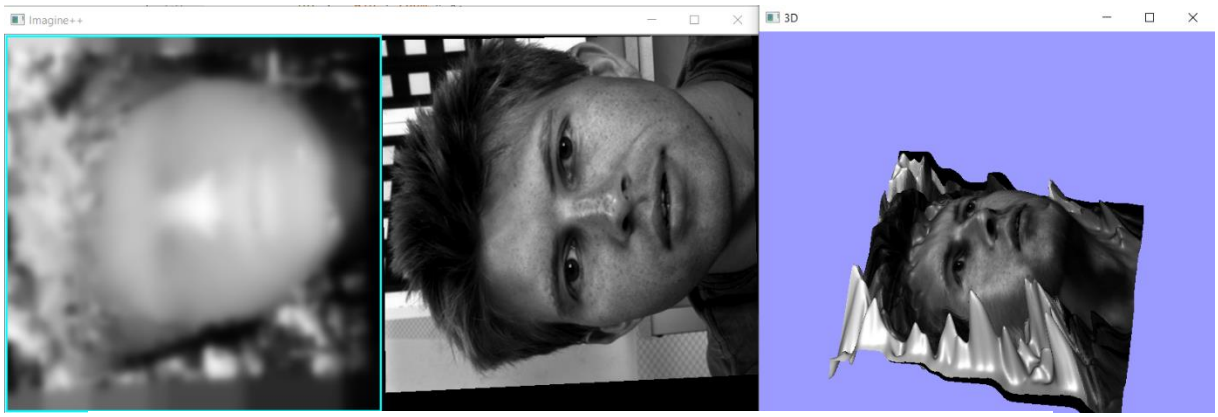

Figure 2: Blurred disparity map, initial image, 3D mask (lambda=0.01, win=3)

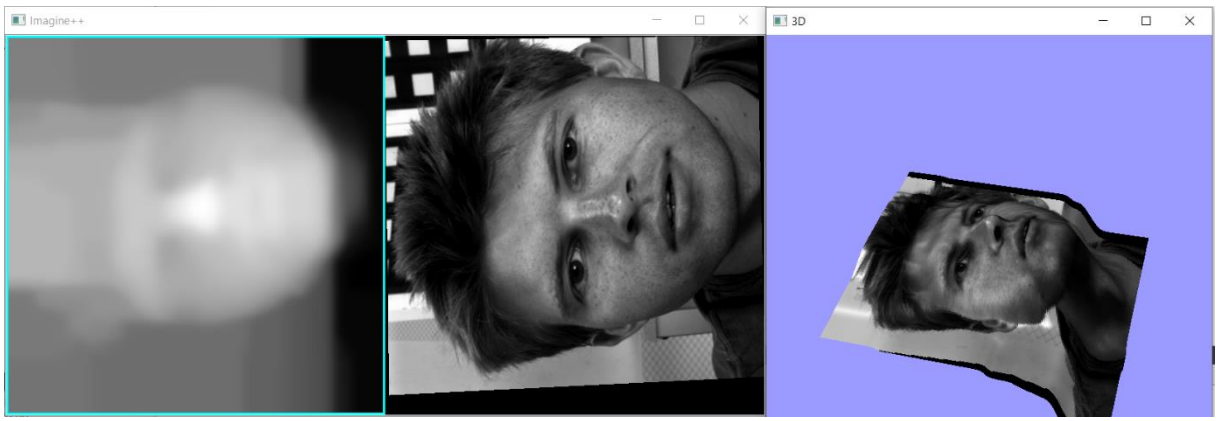

Figure 3: Blurred disparity map, initial image, 3D mask (lambda=0.5, win=3)

We can note that if we give too much importance to the regularization term or smoothness term (figure 3), only the high variations of disparity are kept and the little variations of disparity (like the hair) are removed by the regularization term. On the other hand, if we give too little importance to it, we observe (figure 2) strong oscillations of the disparity in the uniform zones (background). These oscillations are removed, smoothed by increasing lambda (figure 1).

Change the NCC neighbourhood size

The higher the NCC neighbourhood region, the higher the computational time. Also, the boarders increase with the neighbourhood size. However, higher neighbourhood does not really affect the output disparity map.

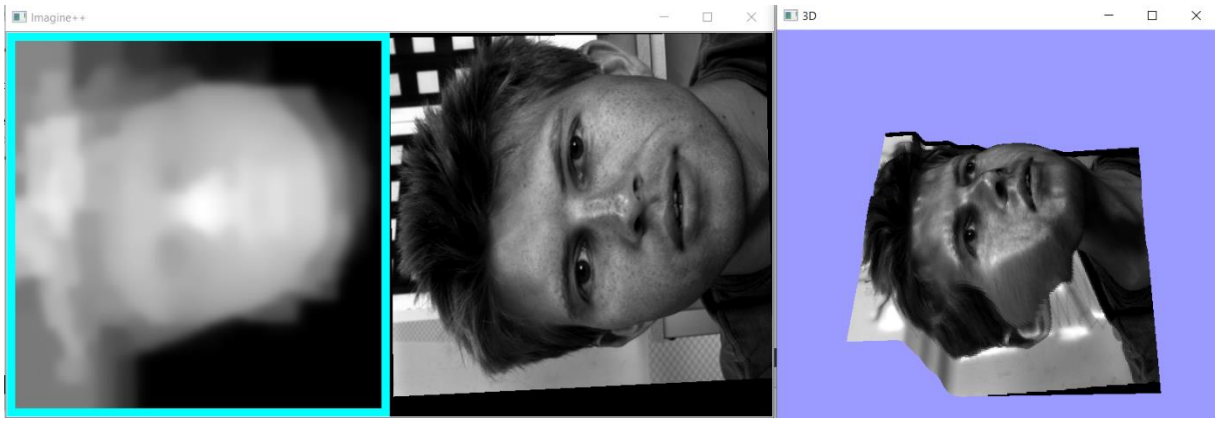

Figure 3: Blurred disparity map, initial image, 3D mask (lambda=0.1, win=15)

Comparison with growing-region method (local seed method TP3)

The computational time of the growing-region method is higher than the global method. Moreover, the result is discretised and less smooth (see background). Appart from the face, there are many errors in the estimation of the disparity.
Overall, the GCDisparity method performs better than the growing-region method.