Proposed method 1

Fundation of this project:
[4]. Shiwei Zhou, et, al.(2018) Improving disparity map estimation for multi-view noisy images. *ICASSP 2018 conference.*

A disparity estimation method for multi-view images with noise is investigated by constructing multi-focus image and view selection

Assumption: disparity values are integers.

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3D focus image stack (3DFIS)

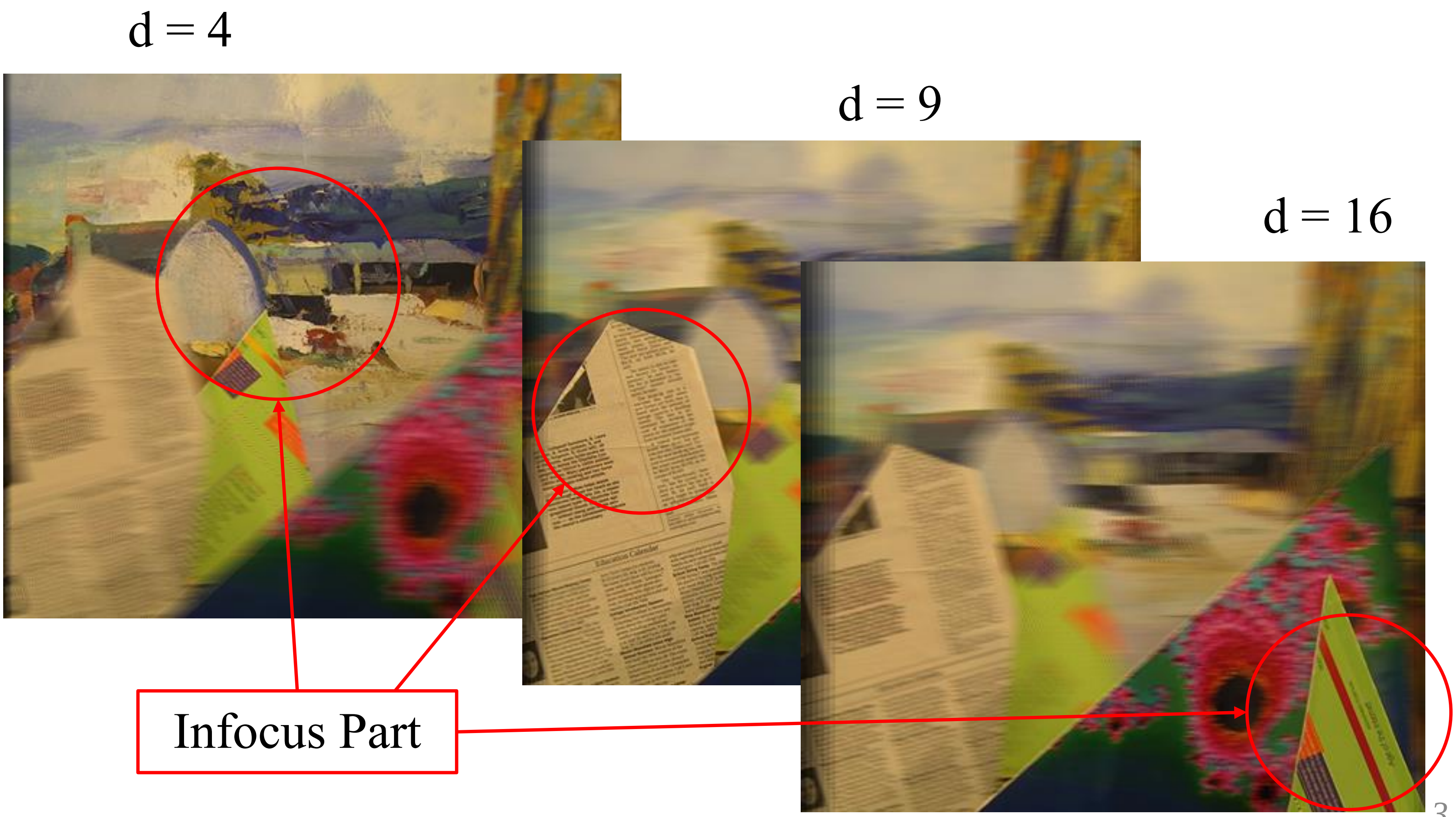
Implementation:
Given m multi-view images, use one as the reference image and given d_max possible disparity values.

for d = 1 to d_max:
    for i = 1 to m:
        Move the other images towards a certain direction
            for a certain distance $L_i \propto$ (d, relative distance);
    end
end

Then we obtain 3d focus image stack as:

$$F^d(x, y, k) = I_{s,t}(x - sd, y - td)$$

3D focus image stack



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To compute matching cost, we use windows (regarded as ***v***) on each view to find correspondence.

$$C^*(x,y,d)=\frac{1}{n(h-1)}\sum_{k'=2}^{h}\left\|\tilde{\mathbf{v}}_{k'}^{d}\right\|_1$$

Where $\tilde{\mathbf{v}}_{k'}^{d}$ denotes the vector difference between the reference image and the ***k*** th image. And ***h*** is the number of images that will make best performance.

Finally, the disparity value can be computed as:

$$\hat{d}^*(x,y)=\arg\min_{d} C^*(x,y,d)$$