Hw 1

Aviv and Amir

GrabCut

Results for basic configuration ( 2 components, gamma = 10, lamda = 45)

|  |  |  |  |
| --- | --- | --- | --- |
| Image name | Accuracy | Jaccard | Time to converge |
| Banana1 | 0.96 | 0.87 | 1.7 |
| Banana2 | 0.98 | 0.92 | 1.5 |
| Book | 0.97 | 0.93 | 09 |
| Bush | 0.95 | 0.74 | 0.85 |
| Cross | 0.87 | 0.65 | 1.2 |
| Flower | 0.99 | 0.96 | 1.16 |
| fullmoon | 0.97 | 0.725 | 0.46 |
| Grave | 0.96 | 0.6 | 0.9 |
| Llama | 0.98 | 0.93 | 0.6 |
| Memorial | 0.976 | 0.88 | 1.4 |
| Sheep | 0.99 | 0.92 | 0.7 |
| Stone2 | 0.99 | 0.98 | 1.05 |
| teddy | 0.983 | 0.94 | 0.65 |

We choose a convergence threshold: stop iterating after 2 iterations that less than 10 pixels became foreground.

As we can see, the images that were the most difficult to process were Cross and Bush.Cross image has a lot of similarity between the base of the cross and the background. Also, its post is thin, so it vanishes after one or two iterations because of the gamma and lambda values (which should be lower in this case and ensure the convergence is slower).Bush image is doing well overall, but the trunk is too thin, so again, after a few iterations, we only have the bush itself with little of a flowerpot.

We chose 2 components because most of images has really noticeable background so 2 colors make sense more then 5 (regards similarity).

|  |  |  |
| --- | --- | --- |
| Image | Mask | GT Mask |
| Banana1 |  |  |
| Banana2 |  |  |
| Book |  |  |
| Bush |  |  |
| Cross |  |  |
| Flower |  |  |
| Fullmoon |  |  |
| Grave |  |  |
| Llama |  |  |
| Memorial |  |  |
| Sheep |  |  |
| Stone2 |  |  |
| Teddy |  |  |

I’ll examine bush, cross and grave images.

Results with original configurations:

Grave: acc: 0.96 jacc: 0.6 time to converge: 0.9 min

Cross: acc: 0.87 jacc: 0.65 time to converge: 1.2min

Grave hasn’t succeeded to identify the top of the grave. We changed gamma to 2 to be more sensitive and number of components to 5 and got this:

Accuracy of 0.97, Jaccard of 0.787 in 0.85 minutes. Great improvement.

We inspected the Cross, which has almost worst results. It still hard to include the top part of the cross as part of the foreground because gamma is too high. After changing gamma to 2 we got this:  
תמונה שמכילה טקסט, שרטוט

התיאור נוצר באופן אוטומטי

Accuracy is 0.9 and Jaccard is 0.73 and running time of 1.4 minutes. We felt that we can achieve even better results with the Cross, so we changed gamma to 0.5 and we got this:  
תמונה שמכילה טקסט, צילום מסך, עיצוב

התיאור נוצר באופן אוטומטי

Acc of 0.91!.