
CS7.505.S22: Computer Vision | Assignment 3

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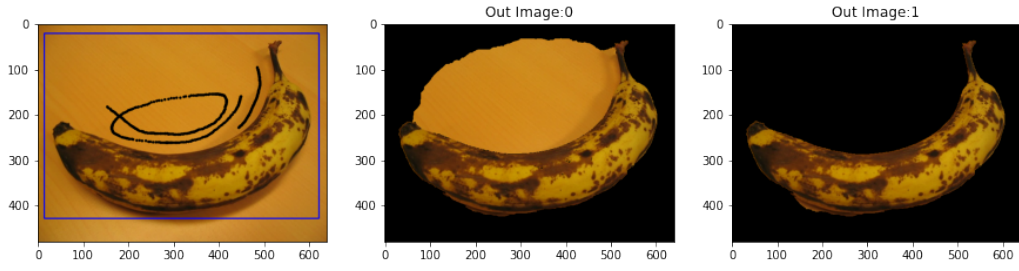
Deliverable 1: Results and Evaluation Score.

Score Table:

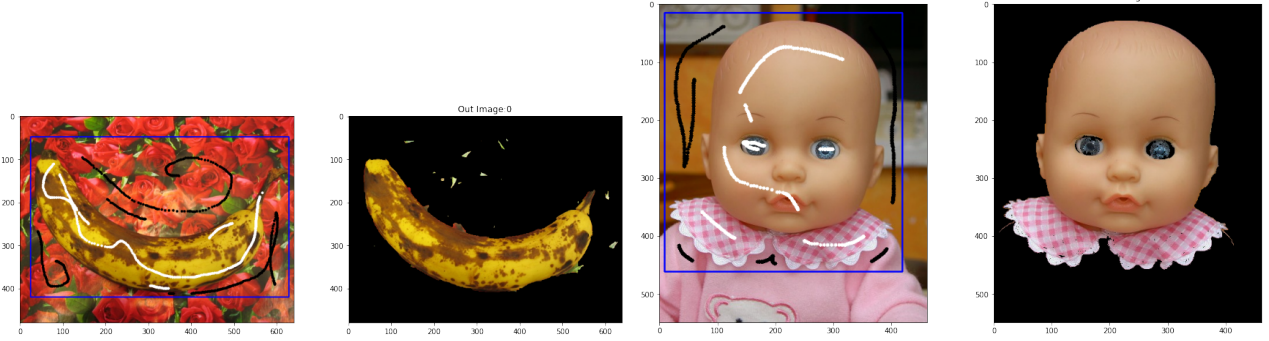
Image	Accuracy	Jaccard	Dice
banana1	0.99	0.97	0.98
banana2	0.97	0.91	0.95
banana3	0.98	0.92	0.96
book	0.97	0.94	0.97
bool	0.90	0.54	0.70
bush	0.88	0.81	0.85
ceramic	0.99	0.97	0.98
cross	0.73	0.28	0.44
doll	0.89	0.77	0.87
elephant	0.93	0.82	0.92
flower	0.95	0.87	0.91
fullmoon	0.97	0.67	0.80
grave	0.95	0.89	0.91
llama	0.98	0.89	0.94
memorial	0.99	0.966	0.98
music	0.97	0.91	0.92
person1	0.97	0.95	0.88
person2	0.98	0.96	0.89
person3	0.99	0.94	0.97
person4	0.92	0.85	0.89
person5	0.96	0.64	0.78
person6	0.98	0.88	0.93
person7	0.97	0.87	0.91
person8	0.90	0.88	0.85
scissors	0.92	0.90	0.88
sheep	0.99	0.93	0.96
stone1	0.99	0.98	0.993
stone2	0.97	0.96	0.98
teddy	0.99	0.96	0.98
tennis	0.91	0.87	0.88

Table 1: Score Table for Each Image

Segmented Images with their Respective Scores

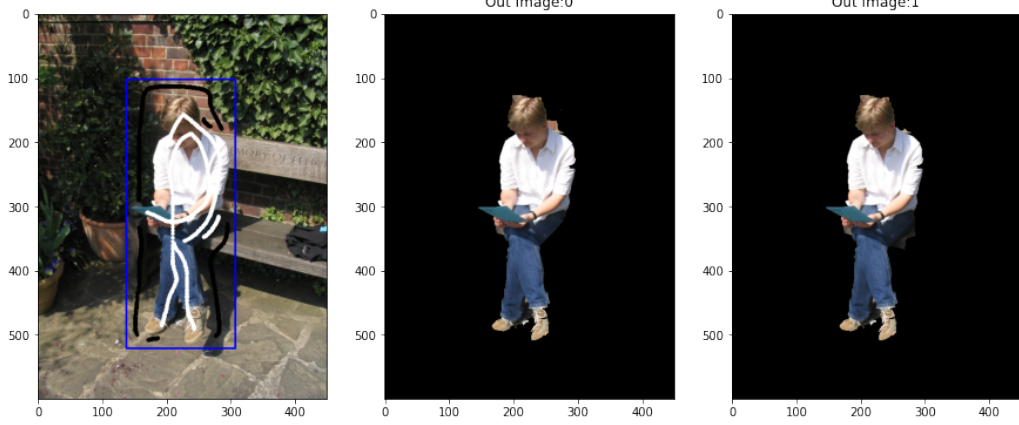


(a) Score: Accuracy= 0.99; Jaccard= 0.97; Dice= 0.98

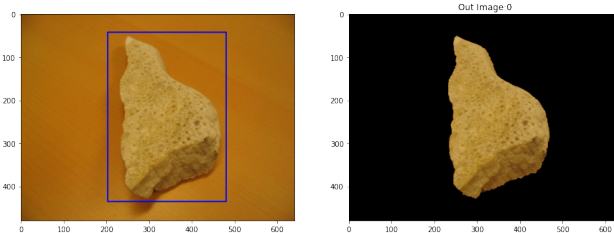


(b) Score: Accuracy= 0.97; Jaccard= 0.91; Dice= 0.96

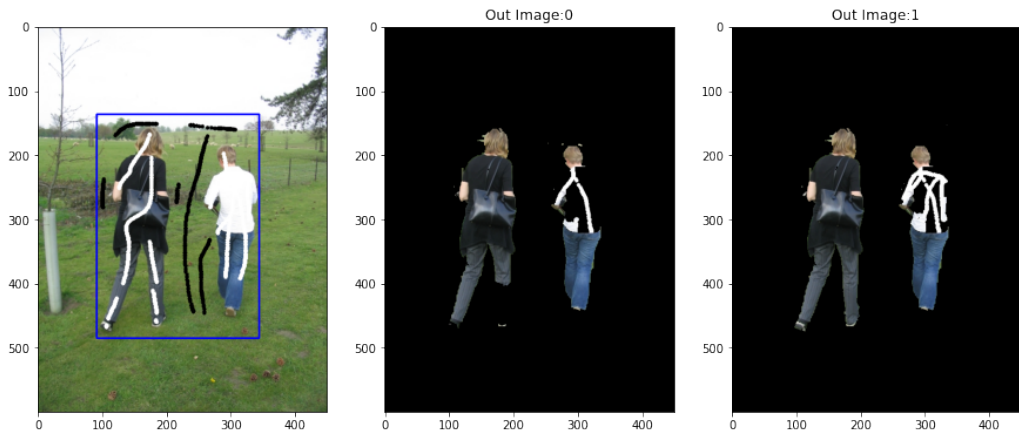
(c) Score: Accuracy= 0.89; Jaccard= 0.77; Dice= 0.87



(d) Score: Accuracy= 0.98; Jaccard= 0.88; Dice= 0.93



(e) Score: Accuracy= 0.99; Jaccard= 0.98; Dice= 0.99



(f) Score: Accuracy= 0.96; Jaccard= 0.64; Dice= 0.78

Figure 1: Segmented Images: With White Strokes denoting Sure FG while Black strokes Sure BG and Blue Box contains FG. Where we have two Segmented Images, that has passed through two pass of iterative algorithm.

Deliverable 2: How changes in the various parameters affects the segmentation.

Question 1: The number of iterations of GMM updating and energy minimization.

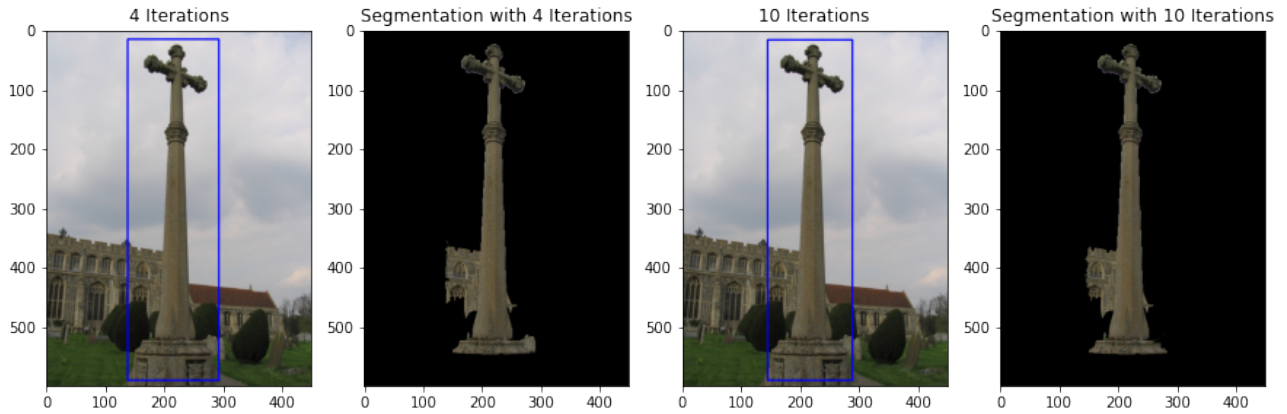


Figure 2: 4 Iterations v/s 10 connectivity

Question 2: Different ways to represent probabilities other than GMMs. 4-neighborhood or 8-neighborhood in your pairwise term.

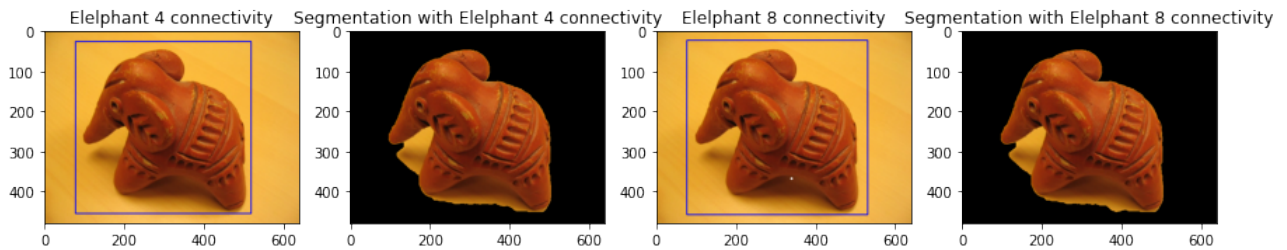


Figure 3: 8 connectivity v/s 4 connectivity

Question 3: The number of mixture components in your GMM.

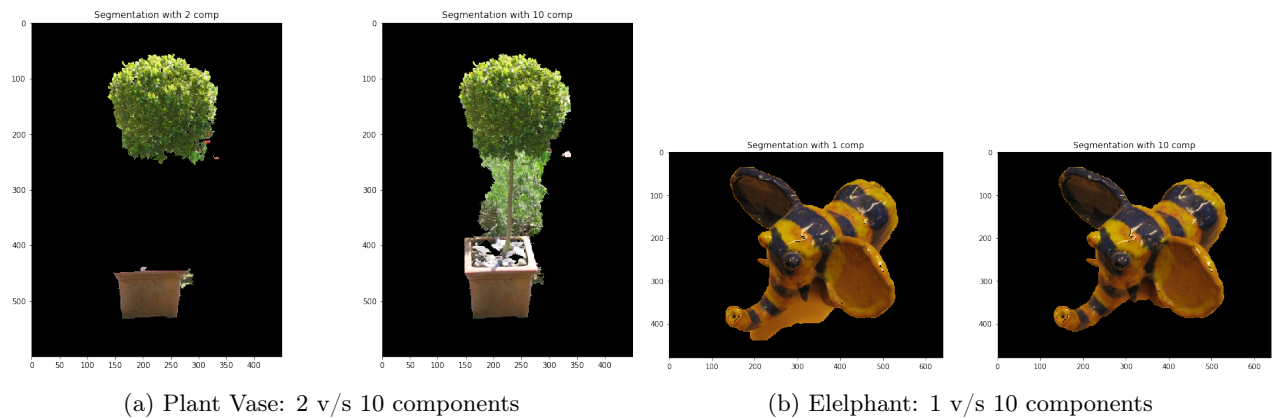


Figure 4: Effect of No. of Mixture Components

Question 4: The choice of gamma.

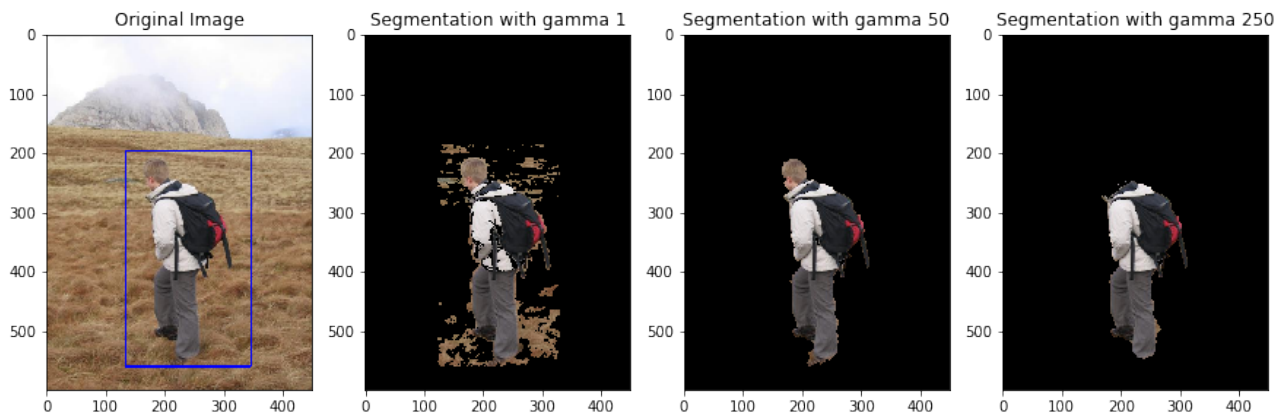


Figure 5: Effect of Gamma on Hiking Guy

Question 5: Effect of a tight initial bounding box or a loose bounding box.



Figure 6: Different Size Bounding Box on GRAVE