

Most of the state of the art of image segmentations are highly dependent on conditional random fields for labeling. However in fully connected CRF instead of using regions we are using all pixels to get results and determine what segment we are on. Although using fully connected CRFs have its own benefits, it also has a huge drawbacks and that is it needs a lot of computational power to use inference to get results. Therefore we need a good approximation to do a fast inference. We usually use two potential functions to determine whether or not a pixel is in a segmentation. One of the potential functions called unary potential function and the other one is called pairwise potential function. It uses these functions to do a good job segmenting the image. After using this model based upon higher dimensional filtering we can approximate computations with a bilateral kernel. So its's a lot like message passing in graphs.