problem1

the values of log-prior density indicate the Compatibility of the neighboring pixels of one image.

constant disparity map shows the highest Compatibility, its Log-prior = 0, cause every pixel has the same disparity.

due to the random noisy pixel, which is not correlated to its neighbor,

the noisy disparity map shows the lowest Compatibility its Log-prior = -2559991.

GT disparity map shows moderate Compatibility, because the pixels belonging to one Object are correlated to the neighbors.

increasing the sigma will also increases the log-prior density ,GT-map from -50685 to -15332.

the Gaussian curve becomes smoother, pixels with different disparity will be considered as more similar.

reducing the range of noise increase the log-prior density. noisy-map from -2559991 to -729330.

because the effect of noise is milder, the pixels are more similar namely more correlated to each other.

probelm2

i) initialize the d0 using gt, the Algorithm ends up near gt, but the disparity map has been blurred, indicating that gt is already the optimal answer.

ii) initialize the d0 using constant value, the Algorithm converge towards GT, showing an limited optimization effect.

iii) initialize the d0 using random value, the Algorithm only gets meaningless result.

we can see the constant value is a better initialization Option than random value.

we also notice that a larger alpha makes the disparity map sharper.