

Assignment 3: CS 736, Algorithms for Medical Image Processing

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Part (a)

The RRMSE between the noisy and ifft of imageKdata images is 0.2249.

Part (b)

Prior Type	a^*	b^*	τ	$\mathcal{R}(a^*, b^*)$	$\mathcal{R}(1.2a^*, b^*)$	$\mathcal{R}(0.8a^*, b^*)$	$\mathcal{R}(a^*, 1.2b^*)$	$\mathcal{R}(a^*, 0.8b^*)$
Quadratic	0.8	-	0.1	0.0837	0.1571	0.1379	-	-
Huber	0.055	0.5	0.1	0.0599	0.0609	428(NC)	0.0600	0.0599
Disc-adapt	0.26	0.2	0.1	0.1066	0.1220	0.1167	0.1070	0.1135

The Huber function's results become insensitive to gamma after a threshold. Note that RRMSE in case of $a = 1.2a^*$ has been evaluated at $a = 1$ if $1.2a^* > 1$. NC means not-converging result.

Part (c)

Figure 1: Noiseless image



Figure 2: Data image



Figure 3: Quadratic-Reconstruction image



Figure 4: Huber-Reconstruction image

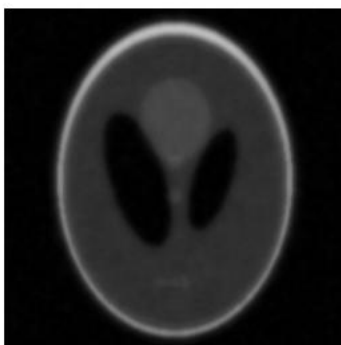
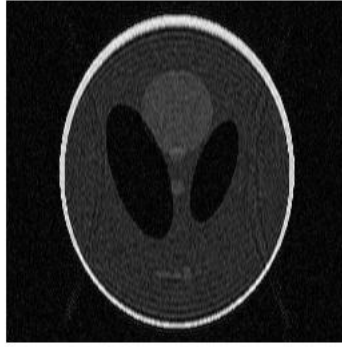


Figure 5: Discontinuity-adaptive Reconstruction image



Part (d)

Figure 6: Quadratic-Reconstruction objective function

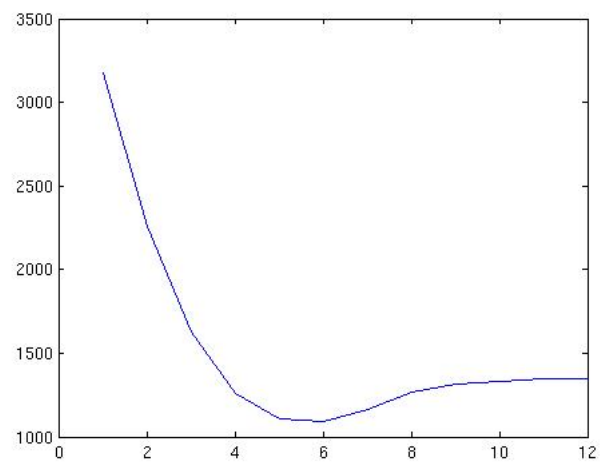


Figure 7: Huber-Reconstruction objective function

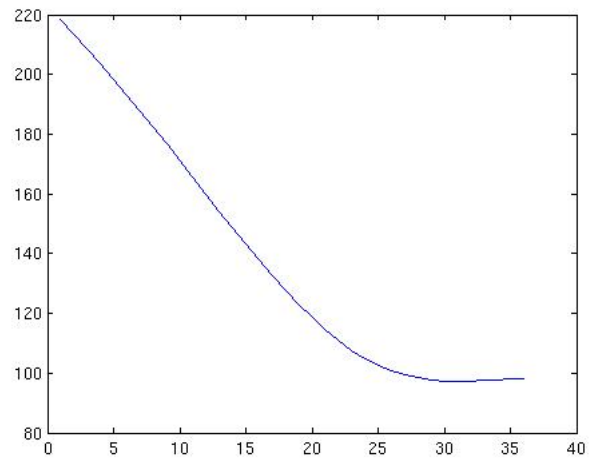


Figure 8: Discontinuity-adaptive Reconstruction objective function

