MIC Assignment-2

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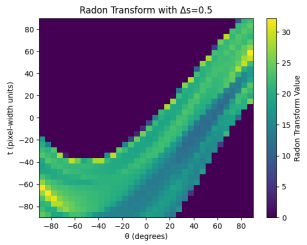
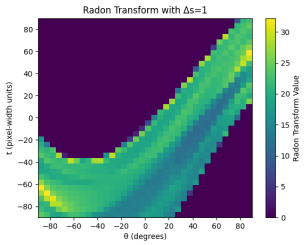
February 14, 2026

Contents

1 Question 1



$\Delta s = 0.5$



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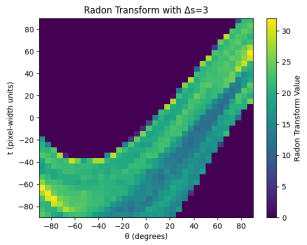
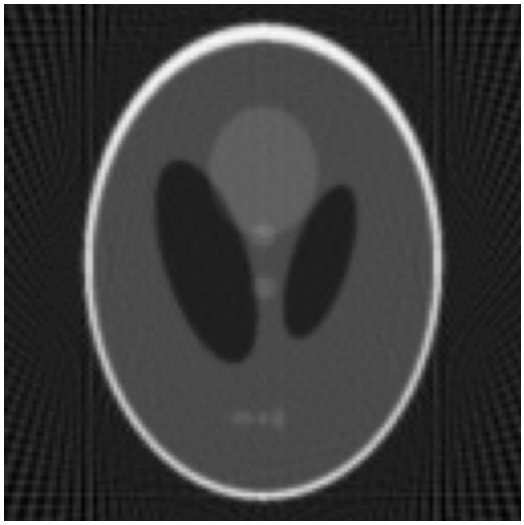


$\Delta s = 3$

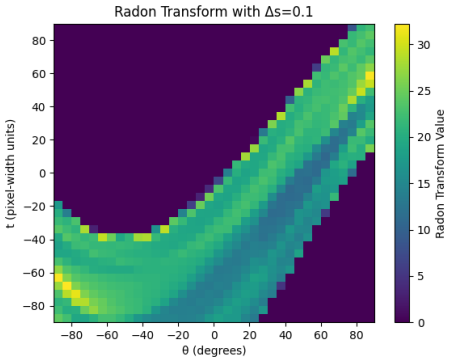
2 Question 2

No Filtering

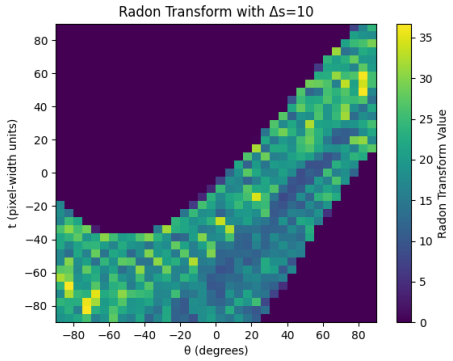


Ram-Lak ($L = 0.5$)

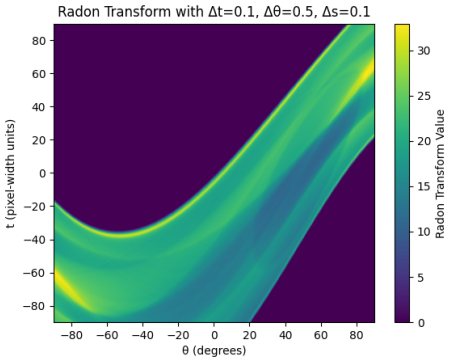
Ram-Lak ($L = 0.25$)



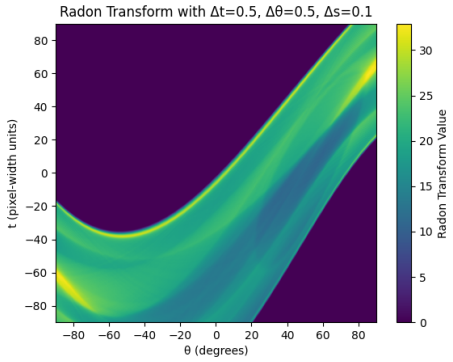
$\Delta s = 3$



$\Delta s = 10$



$\Delta t = 0.1$



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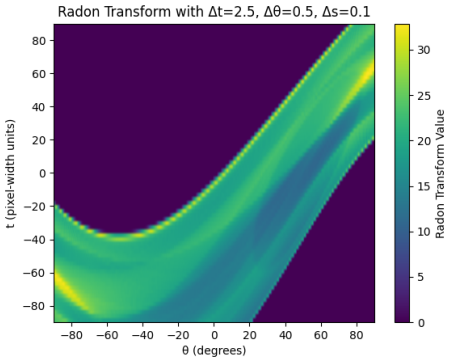
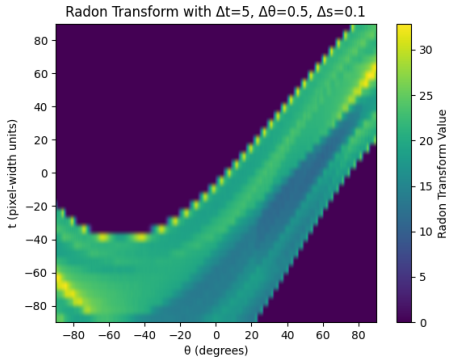
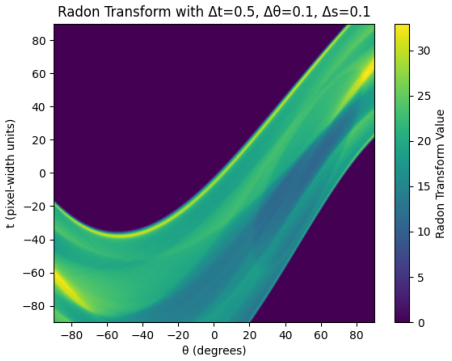


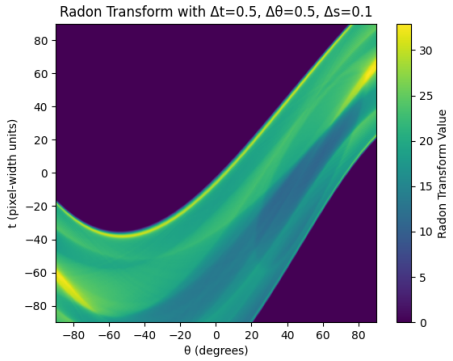
$\Delta t = 2.5$



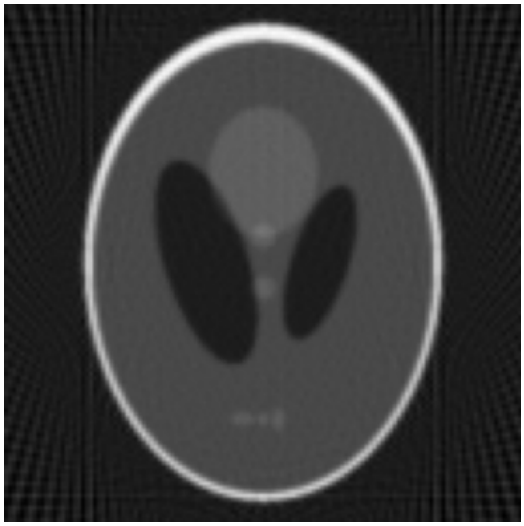
$\Delta t = 5$



$\Delta \theta = 0.1$

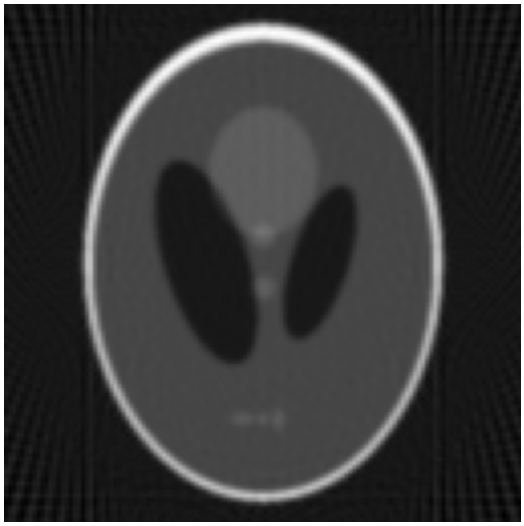


$\Delta \theta = 0.5$



Shepp-Logan ($L = 0.5$)

Shepp-Logan ($L = 0.25$)



Cosine ($L = 0.5$)

Cosine ($L = 0.25$)

Figure 2: Comparison of reconstructed images using different filters and cutoff frequencies.

3 Question 3

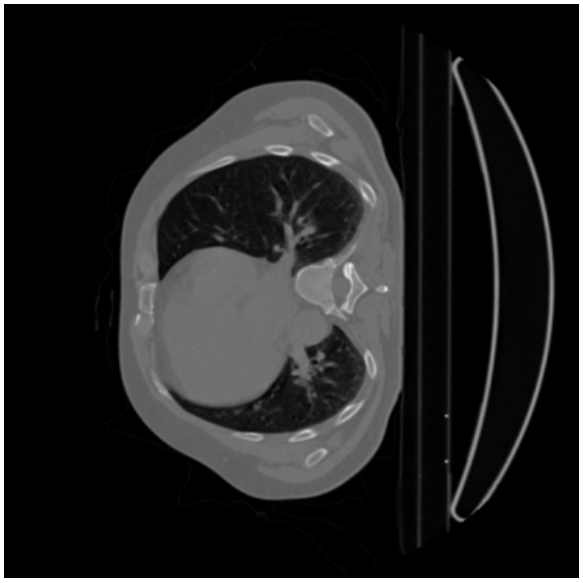


Figure 3: Original Image - Chest CT

Figure 4: Original Image - Phantom

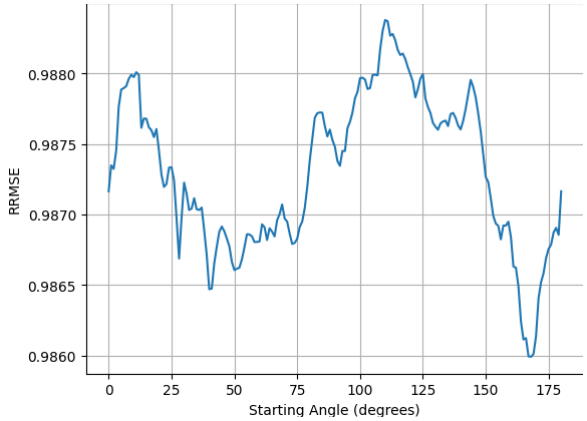


Figure 5: RRMSE Plot - Chest CT

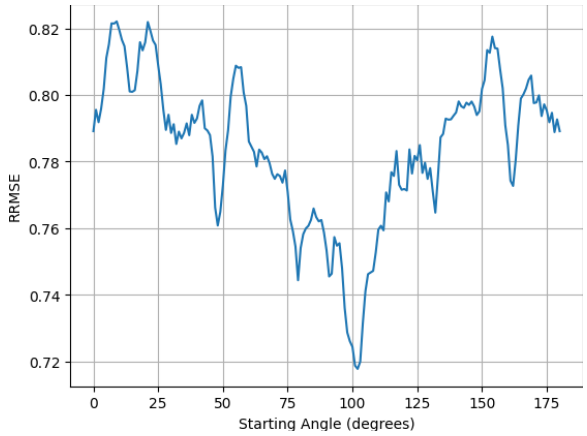


Figure 6: RRMSE Plot - Phantom

Minima of RRMSE for Chest CT is an RRMSE of 0.9859919140151212 at 168 degrees. For phantom, it is an RRMSE of 0.7176981638852817 at 102 degrees.

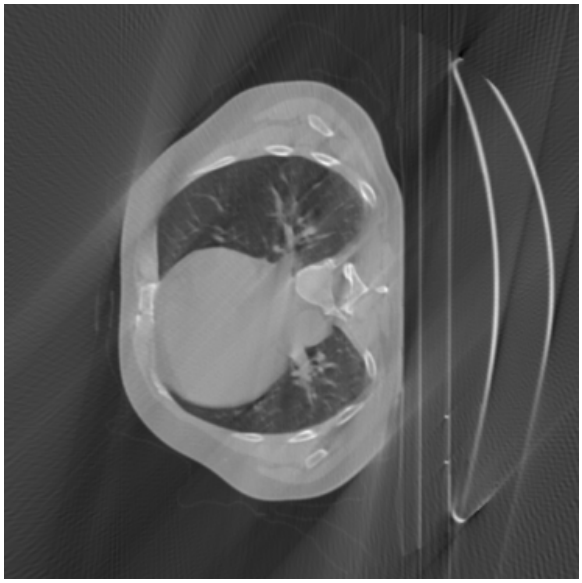
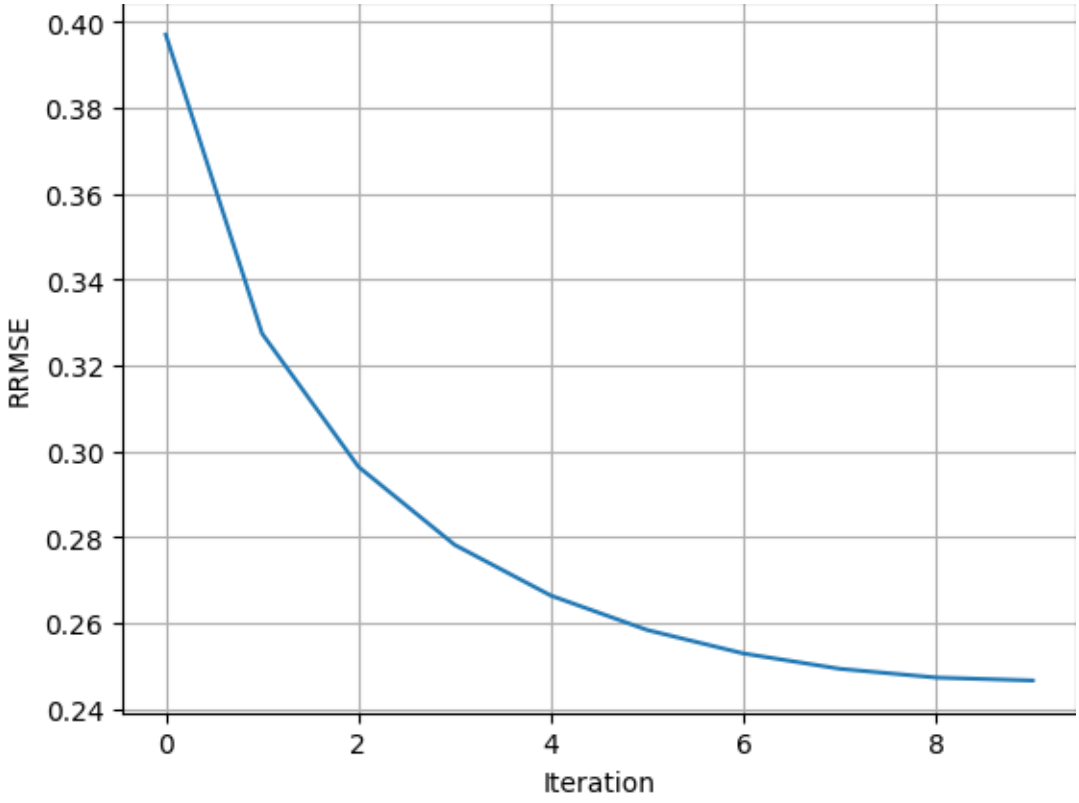
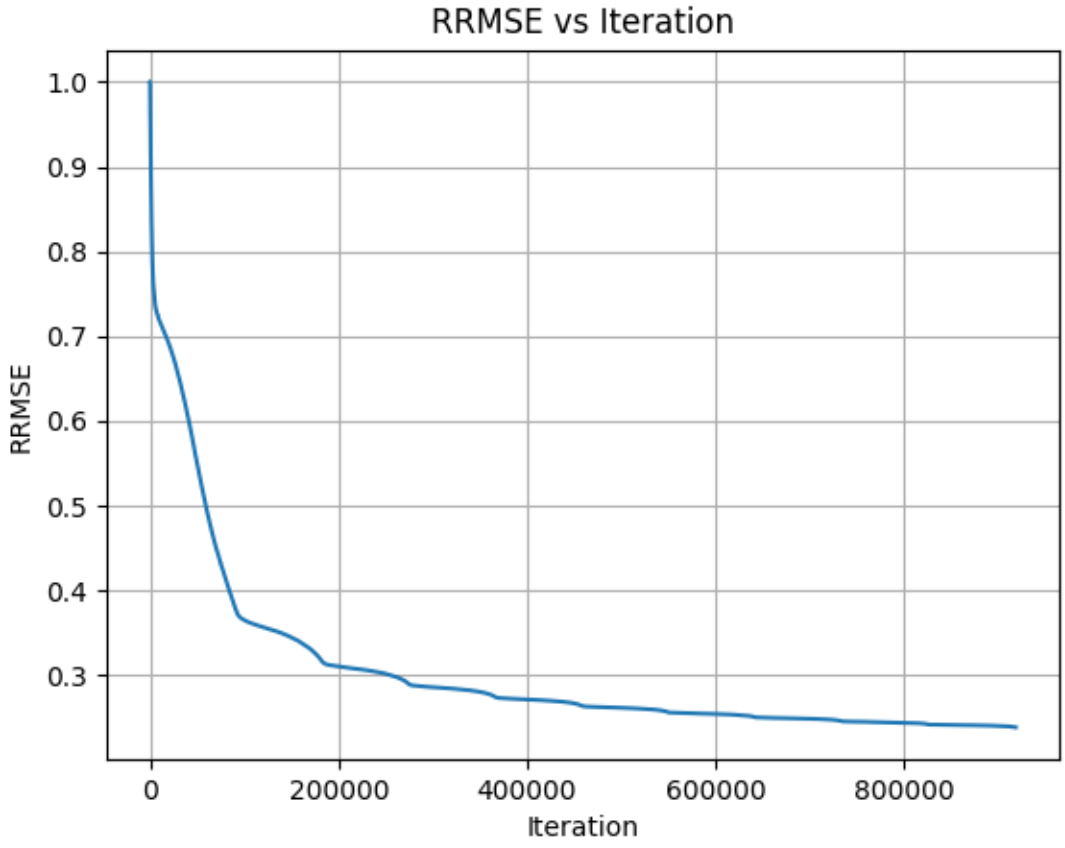


Figure 7: Optimal Reconstruction - Chest CT

Figure 8: Optimal Reconstruction - Phantom

I am choosing a random ordering, which is the same ordering for all values of lambda.





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