

EE 438 Digital Signal Processing with Applications

Homework #7 - MiniProject due 11/3/95

The objective of this mini-project is to reconstruct an image from its projected data. The projection data is contained in the matlab file

/home/albrecht/bouman/bouman/ee438/pz.mat

The data is collected at 32 uniformly space angles ranging from $\theta = 0$ to $\theta = \pi(31 / 32)$.

At each angle, the samples are taken with a sampling period of $T = 1$. I recommend that you use matlab to do this miniproject. For the main course project, you may want to use matlab or C. Your miniproject report should include a listing of the programs you used, and clearly labeled hard copies of all images and plots.

Do the following:

- 1) Read the sinogram into matlab using the load command. Then display (and print) the resulting image. (Hint: You will need to use the colormap() and image() functions.)
- 2) Compute, plot (and print) the filter impulse response required for the convolution backprojection algorithm.
- 3) Filter the projections, truncate them the original length, and then display (and print) the filtered projections.
- 4) Backproject the filtered projections to form the CBP image. Display (and print) the CBP reconstruction. Also compute the maximum value of the reconstruction and list this with your final miniproject results.