

Project #4 Fourier Transforms

Due Thursday October 14th

Periodic Noise Reduction

- (a) Write a program that implements sinusoidal noise of the form given in Problem 5.14. The amplitude, A , and the two frequency components u_0 and v_0 shown in the problem equation should be program variables.
- (b) [Download](#) image 5.26(a) and add sinusoidal noise to it, with $u_0 = M/2$ (the image is square) and $v_0 = 0$. The value of A must be high enough for the noise to be quite visible in the image.
- (c) Compute and display the spectrum of the image.
- (d) Notch-filter the image using a notch filter of the form shown in Fig. 5.19(c).
- (e) Download image Mesh_text from the course web site. This is a binary image of hand printed text written on paper with 0.1 inch gridlines.
- (f) Fourier transform the image and determine the frequency components corresponding to the grid.
- (g) Using frequency domain operations remove the grid. Describe how well this worked.
- (h) Can you suggest any spatial domain operation(s) to remove this mesh?