

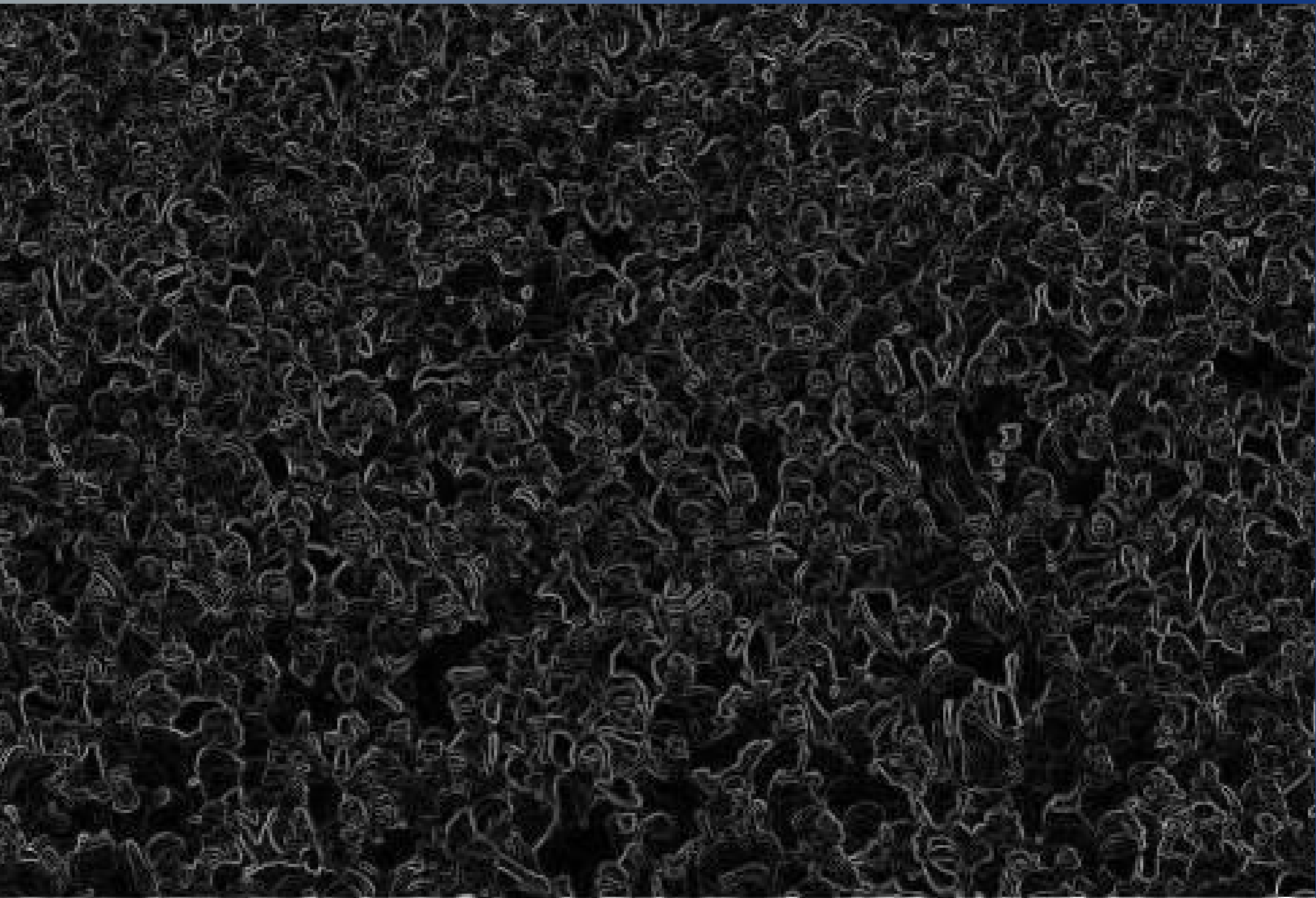
Week 10-11

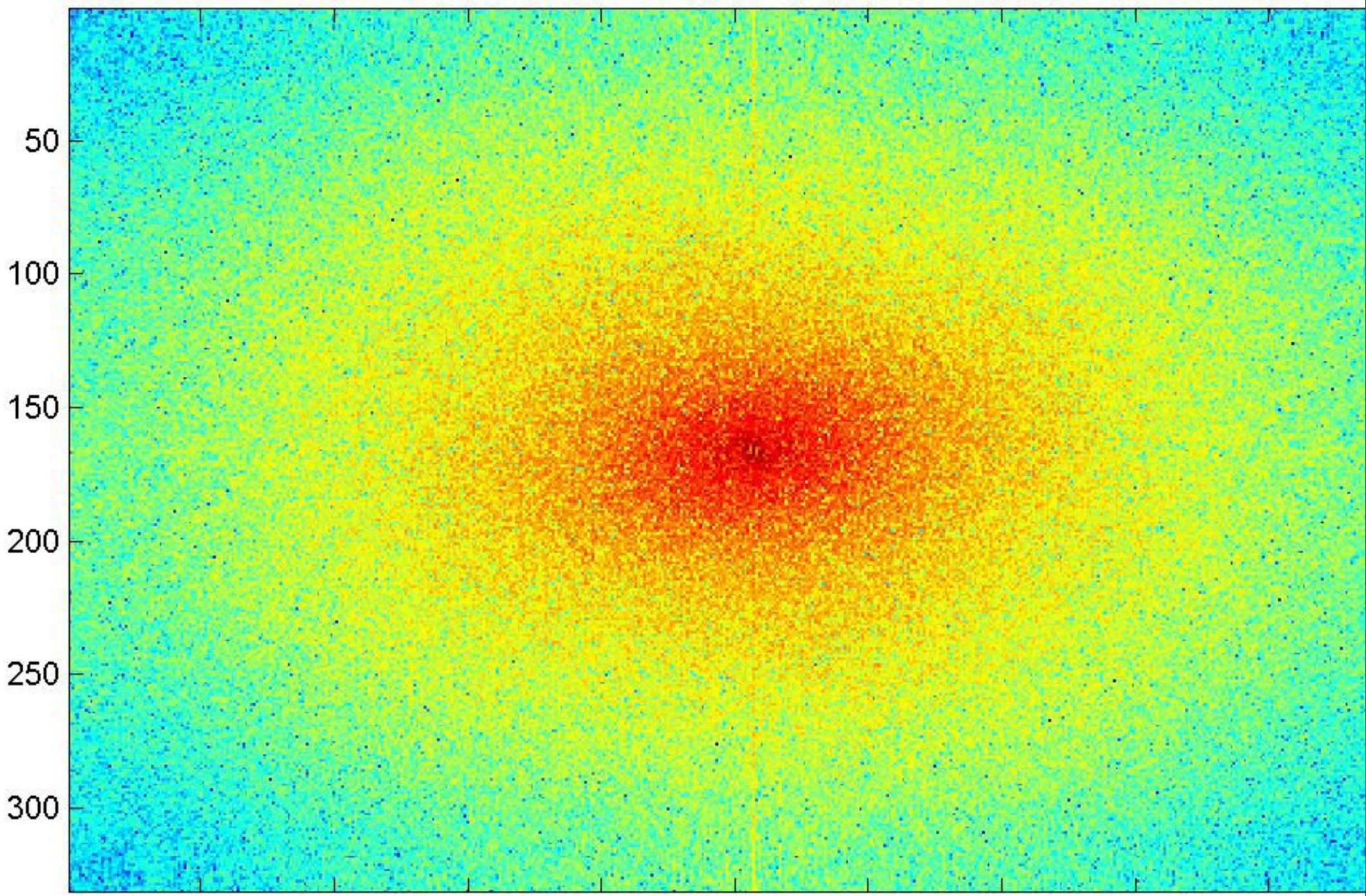
Cody Seibert

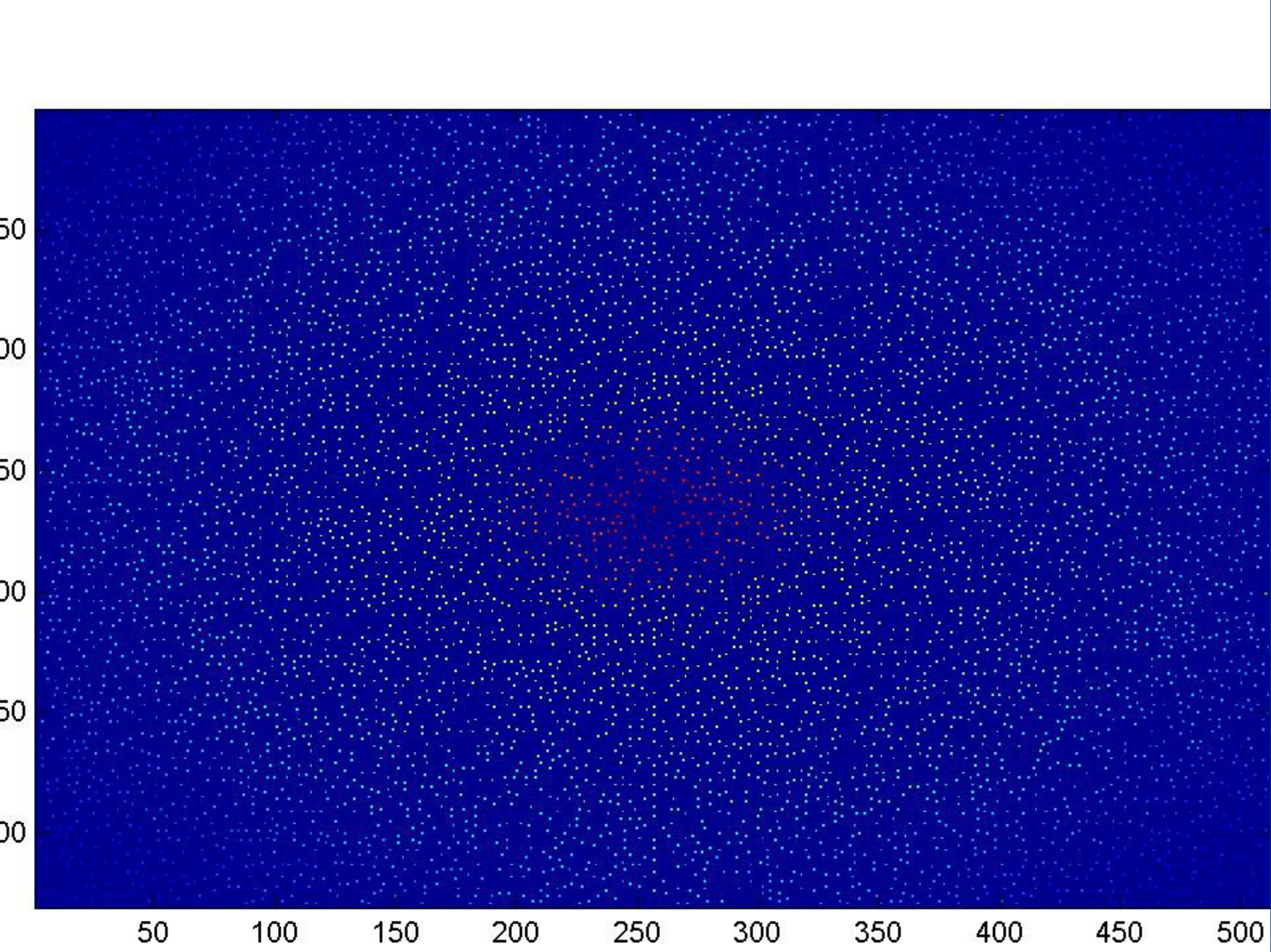
Fourier Map and Window Size Calculation

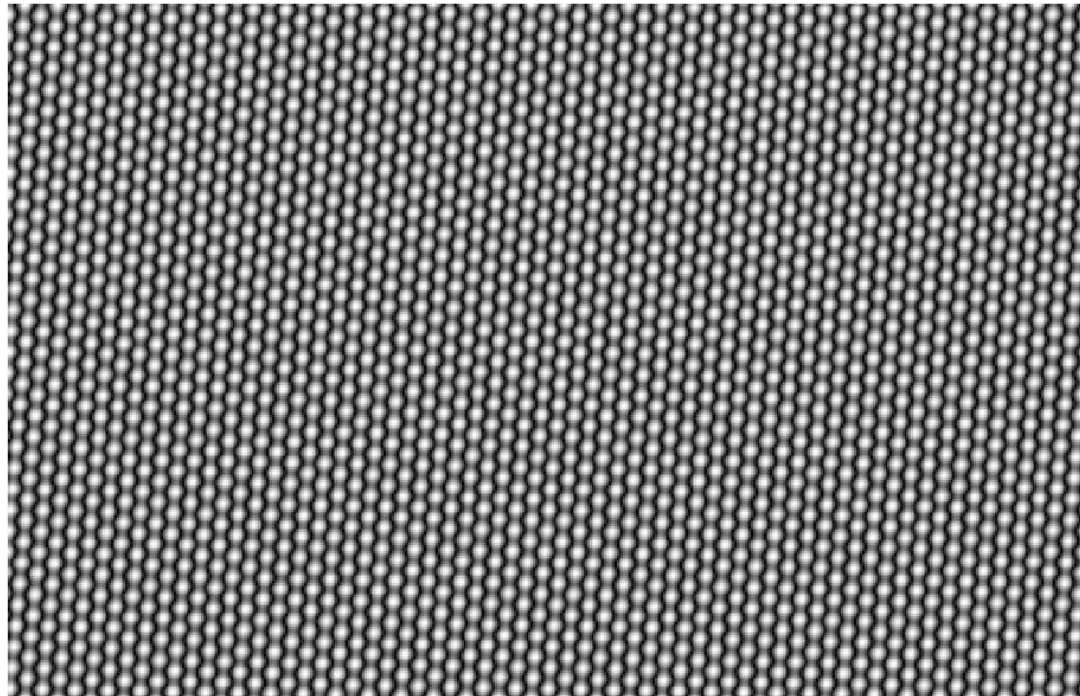
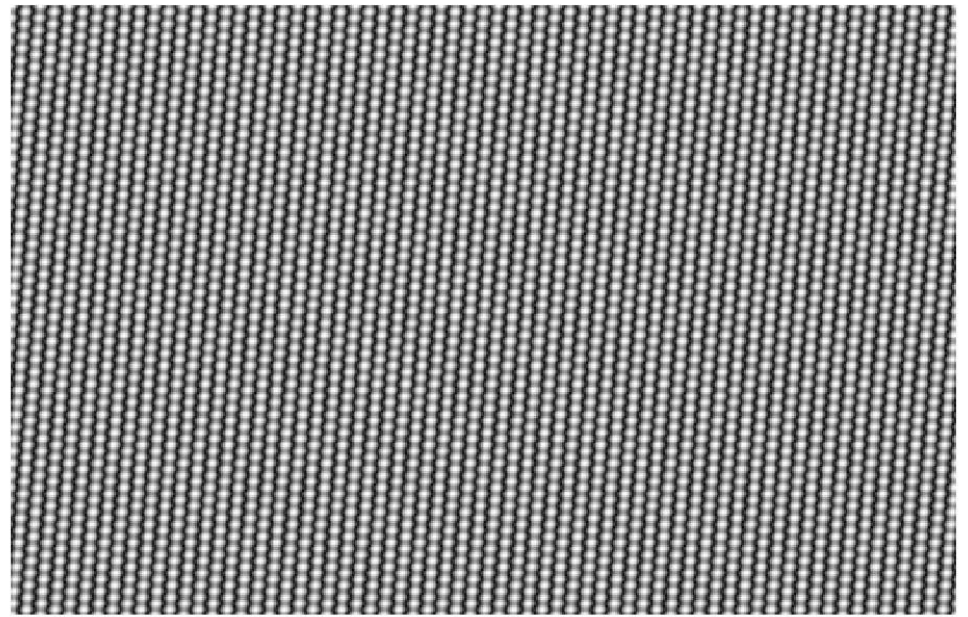
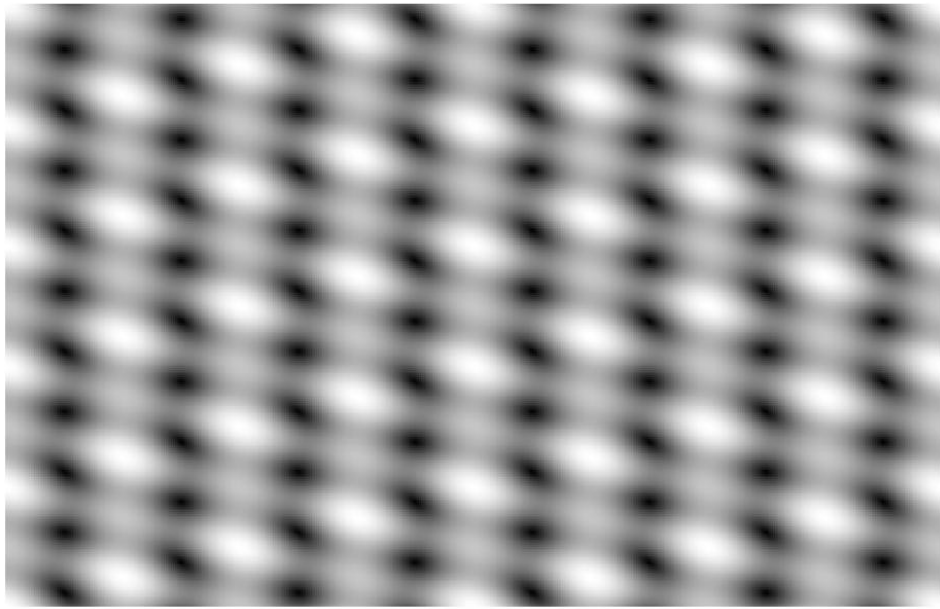
- Take gradient of image
- Computer Fourier transform
- Non-maximum supression on Fourier transform
- Reconstruct Images using 1 peak on X and Y
- Gradient of Reconstruction
- SAD (Sum of Absolute Difference)
- Combine closest images to get Fourier Map
- Use peak distance for window size

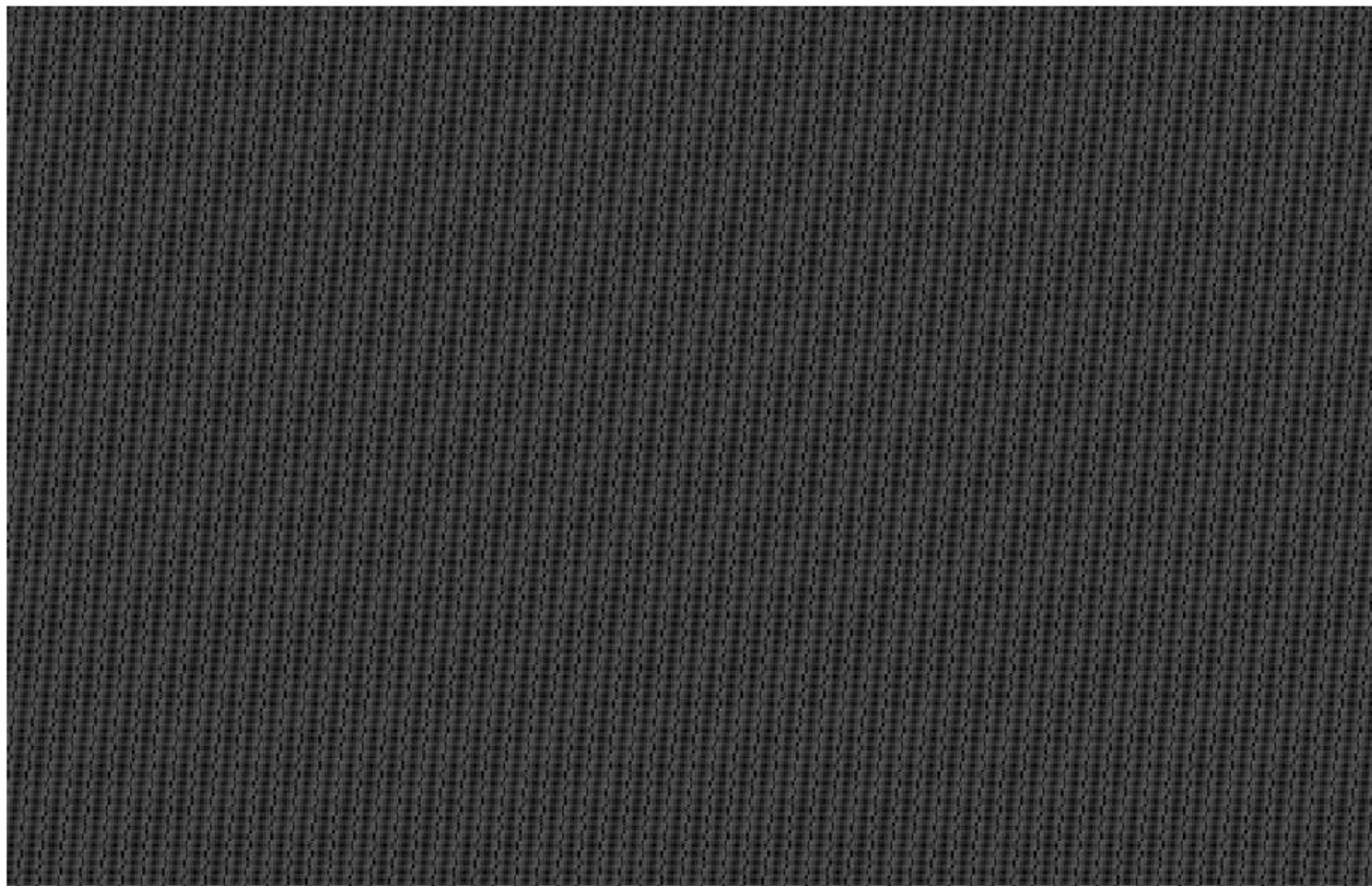


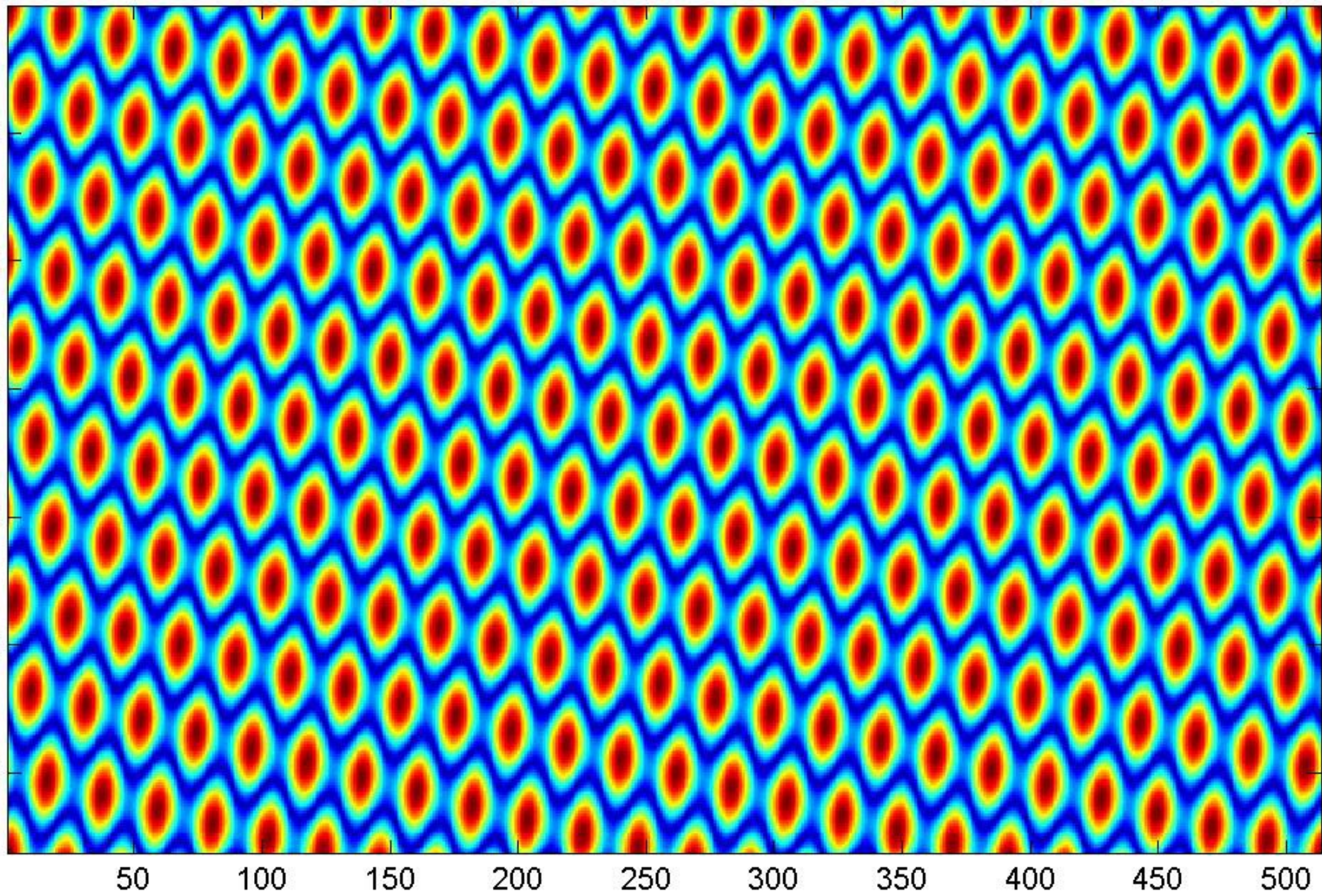












Window Size

- We can estimate window size from this best fitting checker-board pattern
- Take distance from peaks to center in both X and Y direction
- $W_x = \text{Image.Width} / (2 * \text{distanceX})$
- $W_y = \text{Image.Height} / (2 * \text{distanceY})$
- $\text{WindowSize} = \text{avg}(W_x, W_y)$

Combined Results

Image	Ground Truth	SFH	SH	SF	FH	S	H	F
#2	630	640	669	718	657	731	681	949
#5	1309	1335	1436	1384	1256	1456	1307	1422
#6	1196	1336	1474	1337	1267	1582	1414	1553
#7	1667	1555	1543	1634	1373	1860	1485	1703
		188	568	337	545	827	453	825

Issues

- Finding the correct window size fails when the frequency gets large
- Too small of a window size will result in extreme over estimation



Improvements

- Fix the automated window size calculation
- Try a difference other than SAD
- Try pre-processing other than gradient