ECSE 4540: Introduction to Image Processing **Fall 2019**

Lecture 7: The 2D Discrete Fourier Transform

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It covers: The 1-D Fourier transform, the 2-D Fourier transform, interpreting the 2D FT decomposition, the 2D FT basis functions, interpreting the 2D FTs of natural images, Matlab's fftshift, artifacts caused by image boundaries, a lower-frequency image, an image with strong edges, a high–frequency image, Fourier transform properties, circular convolution, zero padding, edge orientations in spatial vs frequency domains, sudoku image example.

Follows section 4.5–4.6 the textbook (Gonzalez and woods, 3rd ed).

References

[GW18] Gonzalez and Woods, Digital Image Processing, *Pearson*, 2018.