2D Fourier Series and Image Analysis

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- **Name:** **Lab Date:**
- **Student No.:** **Day of the week:** **Time:**
- **Name:** **TA Signature:**
- **Student No.:** **Grade:**

1. 2D Fourier Basis Vectors

- *Have your TA sign here after you have shown that your basis vector function works. (/1)*
- *What values for l and k produce the lowest frequency complex exponentials (ballpark is enough) (/1)*?
- *Which values for l and k produce the highest (ballpark is enough)? (/1)*

2. 2D Fourier Transform

- *Have your TA sign here after you have demonstrated that your 2D DTFS works and is implemented correctly. (/1)*
- *How does the 2D square pulse compare to the 1D square pulse with regards to their Fourier coefficients? (/1)*
- *How many times faster is Matlab's 2D DTFS implementation via fft2 compared to your implementation? Show your calculations. (/1)*

3. Image Compression

- *Have your TA sign here after you have demonstrated that your image compressor function works and is implemented correctly. (/1)*

- *Is there a rate that you cannot get below no matter how high you set* `cutoff`*? What is it? (/1)*

- *Why is this lower bound on the rate present? (/1)*

- *Suggest a way to improve this lower bound. Have your TA sign here after you have suggested something appropriate. (/1)*