HW# 10 (10주차 과제)

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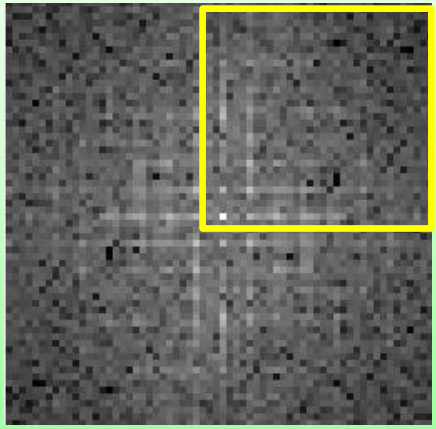
Fabric Texture Recognition (1/2)

- Fabric images with repetitive patterns
  - 20 patterns

Fabric Texture Recognition (2/2)

- Use magnitudes of 2D DFT coefficients
  - 64x64 DFT (−32 ~ +31)
- Use the DFT coefficients partially
  - Remove DC component
  - Choose the dominant coefficients for textures
  - Use the periodicity

2D DFT



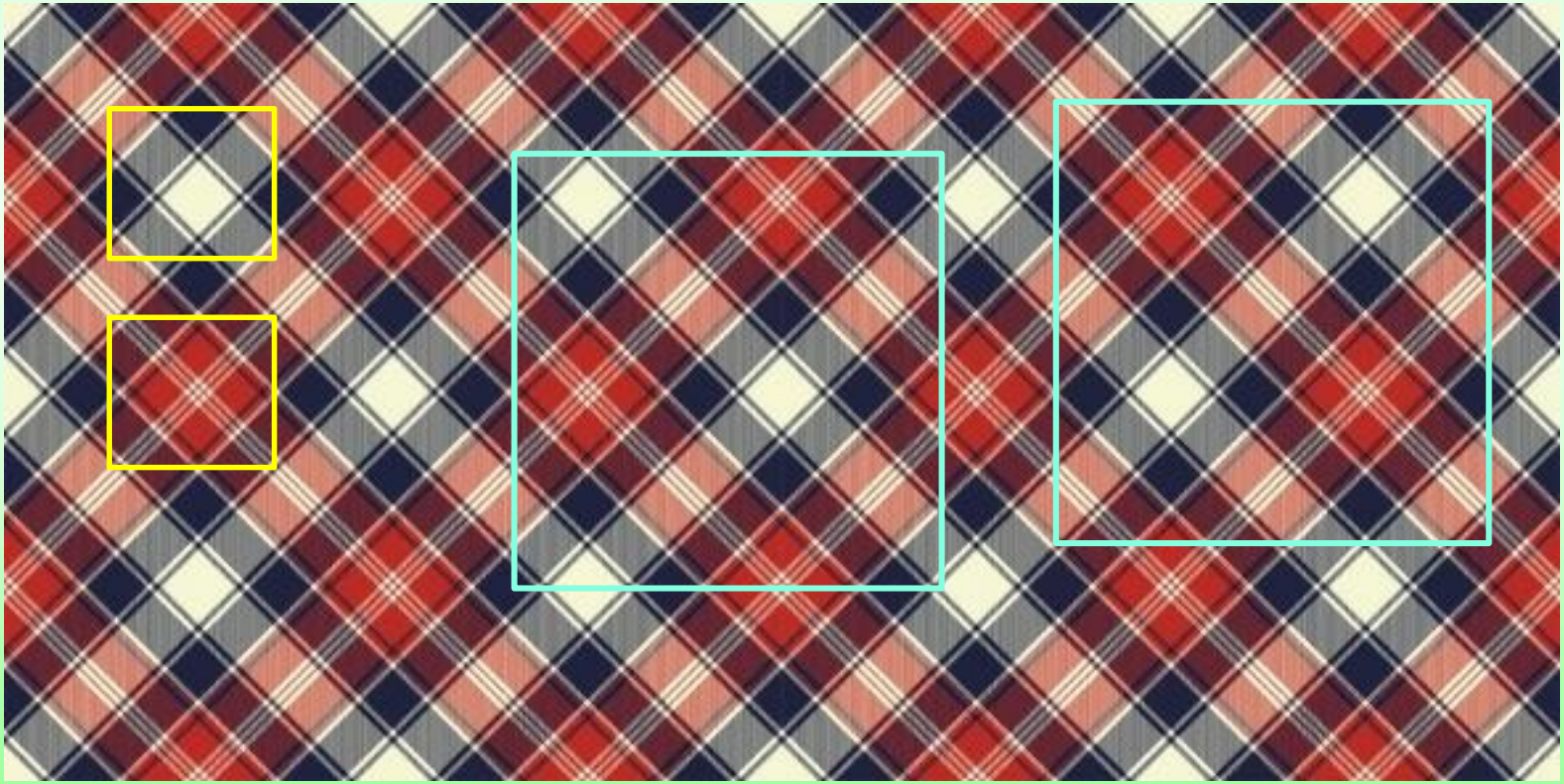
Magnitude

Hints and Comments (1/4)

- Normalization of image size to include the repetitive patterns in the block (32 or 64)
  - Self-differences

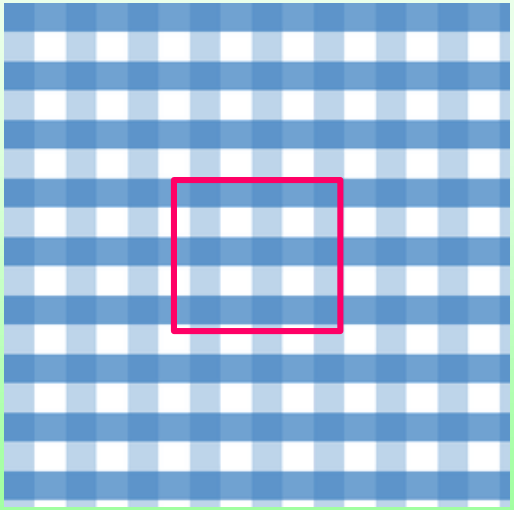
Hints and Comments (2/4)

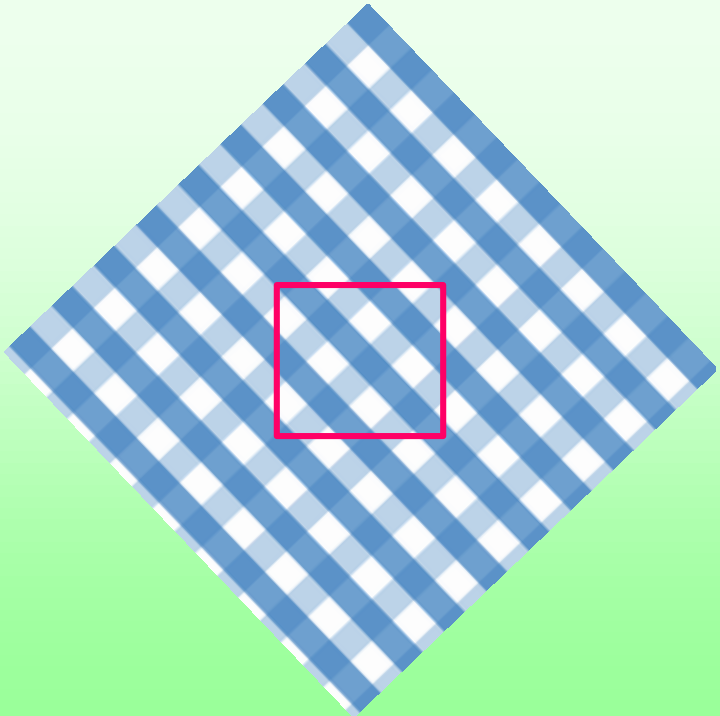
- The 64x64 block includes the repetitive pattern
  - Image rescaling



Hints and Comments (3/4)

- Image shift (translation) does not almost change the magnitudes of DFT coefficients, but the image rotation changes them much.
  - Different texture patterns





Hints and Comments (4/4)

- How to compare the DFT coefficients?
  - Vector distance with the selected coefficients
  - Compare partially the coefficients from the total selected coefficients
    - EX: Largest 5 coefficients for a pattern
- You should model the threshold or criterion for decision
  - Observe your 20 patterns in advance
  - Find the average vector for each pattern

Report

- How to select and compare the DFT coefficients
- Experimental Results
  - 20 fabric patterns
  - Input: randomly selected blocks in the fabric images
  - 5 times for each pattern
- Due: 11월 18일 (Wed.) 22:00
  - Upload to blackboard
- Use Open 2D DFT libraries
  - FFT (Fast Fourier Tansform) algorithm