Media Processing SIV 864

Assignment 2

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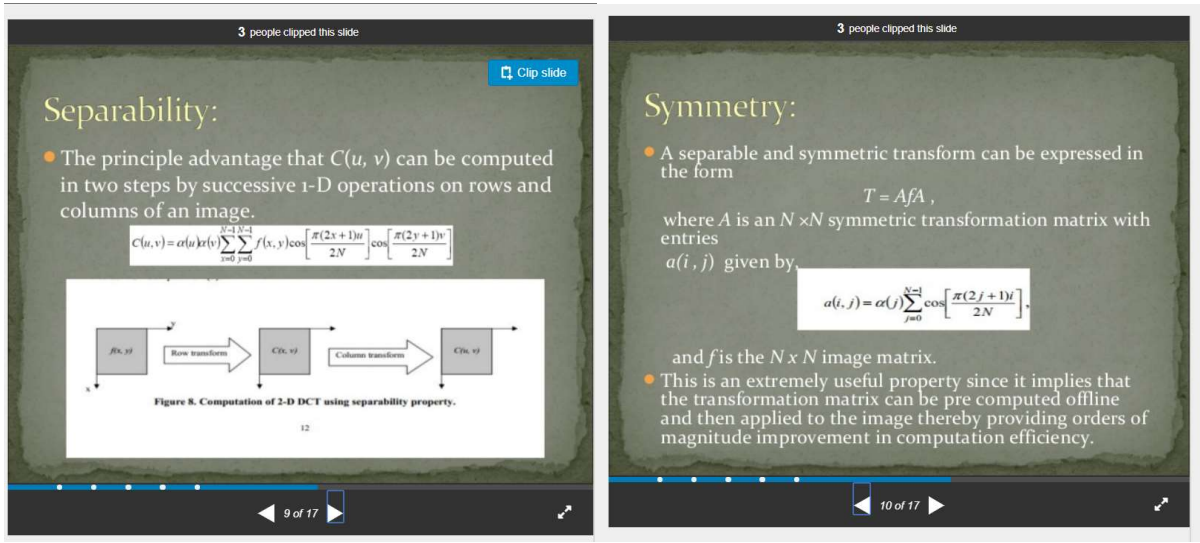
PART A

Q1. How does DCT perform in relation to its energy compaction for the images which are correlated and decorrelated (not correlated)?

Answer: If signal haven't the same power at all frequencies which implies there are correlation between the samples in the time domain. This represent redundancy of data and should be removed with loss of information. This signal is also termed as "not white". So DCT is for frequency based transformation, the more non white will lead to more energy compaction.

Q.2 In what ways the properties of separability and symmetry of DCT are useful?

Answer:



References: https://www.slideshare.net/rashmikarkra/discrete-cosine-transform-47528535

Q.3 Consider the Table 1, what does reduction of entropy indicate? For example, in case of Baboon it is shown that there is a drastic reduction of entropy.

Answer: The entropy reduction is huge. Entropy of original image shows high frequency and detail spatial information. Grayscale is uniformly distributed across the image and so coding is inefficient when done in spatial domain.

PART B

Image References : https://www.google.com/search?q=jfif&rlz=1C1CHBF_enIN824IN824&sxsrf=ACYBGNTI2yKg3AXRQ-Gbp5TSJ9nL13cwbQ:1573016732145&source=lnms&tbm=isch&sa=X&ved=0ahUKEwirha7859TlAhXJdCsKHa3JBS0Q_AUIEigB&biw=1536&bih=722#imgrc=jlTsaf-KzJxQKM

Method References: https://www.programcreek.com/python/example/107277/scipy.fftpack.dct