

B.N.M. Institute of Technology

Bengaluru – 560070

Innovative teaching methods

Title of Innovative method/ activity: Quiz

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Designation: Assistant Professor

Goals / Objective of method: Quiz (oral & written) can be used as an effective method to revise any of the topics covered in the class. The quiz was aimed as a revision for some of the units of the subject on Image Processing and was conducted before a test.

Description of method : The topic of the quiz was given to the students and were asked to prepare on it beforehand. Students in a class were divided into 4 to 5 groups. Oral quiz questions were projected one question at a time for each of the groups in turns. The winners were suitably rewarded. Also, the solutions for the questions which the students didn't answer were discussed.

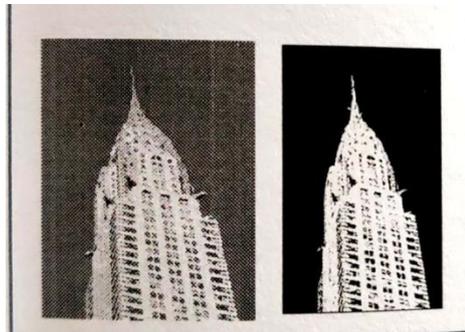
Benefits of method: Quiz both oral & written help students revise the topics which are already covered in the class.

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Oral Quiz

Units covered : 3,6,8

1. For a matrix A to be orthogonal it has to satisfy the equation.
2. State the rotation property of DFT.
3. Write the matrix equation to find the transformed image.
4. Separable property allows us to find 2D transforms using two _____.
5. The transform decomposes an image into a weighted sum of _____ images.
6. Equation for a 2D DFT is _____.
7. A matrix is said to be Unitary if _____.
8. Name two properties of Unitary transforms.
9. Write the 4-point DFT Matrix.
10. Give an example for a 3x3 Laplacian mask.
11. High frequency emphasis filter is given by
12. _____ is the equation for Butterworth low pass filter as applied to images.
13. _____ effect is found to be prominent in ideal filters.
14. Filter best suited for salt and pepper noise elimination is _____.
15. Define Luminance.
16. In additive mixing of colours green plus blue gives _____ colour.
17. Write the median value of the matrix {15,80,43;23,21,89;57,90,34}
18. What is the image processing algorithm applied to the image on the left to get the image on the right?



19. _____ operator is the basic operator used to obtain sharpening filters.
20. Write the mask used to implement Sobel operator.
21. How is the spectrum of an image centered?
22. In character recognition, broken character segments can be joined by applying _____ filter.
23. Write the laplacian filter in frequency domain.
24. Primary colours of light are
25. Hue represents dominant _____ as perceived by an observer.
26. Primary colours of pigments are
27. Saturation refers to
28. In the chromaticity diagram if a point has 62% green and 25% red content. What is the content of blue?
29. What are the two types of colour image processing?
30. The range of chromatic light in the electromagnetic spectrum.

Answers

1. $QQ^T = I$
2. Rotation Property
3. $V=AU A^T$
4. Separable
5. Basis
6. $F(u,v) = \sum \sum f(x,y) \exp(-j2\pi(ux/N+vy/N))$
7. $QQ^*=I$
8. Energy conservation, compaction, decorrelation
9. $\{1,1,1,1; 1,-j,-1,j; 1,-1,1,-1; 1,j,-1,-j\}$
10. $\{1,1,1,1; 1,-8,1,1,1,1\}$
11. $K_1+K_2 H_{HP}(u,v)$
12. $H(u,v) = 1/\{1+[D(u,v)/D_0]^{2n}\}$
13. Ringing
14. Median
15. Luminance is amount of energy the observer perceives from a light source
16. Cyan
17. 43
18. Thresholding
19. Derivative or difference
20. $\{-1,-2,-1;0,0,0;1,2,1\} \{-1,0,1;-2,0,2; -1,0,1\}$
21. $F(x,y)(-1)^{x+y}$
22. Gaussian low pass
23. $H(u,v) = -(u^2+v^2)$
24. R G B
25. Colour/ wavelength
26. Magenta, cyan, yellow
27. Purity or amount of white light mixed with hue
28. 13%
29. Pseudo colour and full colour
30. 400-700nm