Practice questions VBA

Unit 4

1. In wavelet transform decimation means

A) up sampling

B) Blurring

C) down sampling

D) filtering

1. Gabor transform has

A) Direction selectivity

B) Frequency selectivity

C) Direction, frequency and spatial selectivity

D) spatial selectivity

3) Directional features of image are derived using

A) Fourier transform

B) Gabor transform

C) Radon transform

D) Gabor and Radon transform both

4) Discrete wavelet transform is a combination of

A) High pass and High pass filters

B) Low pass and low pass filters

C) Low pass and high pass filters

D) Low pass and band pass filters

5) Limitation of Fourier transform is

A) It looses the time information totally

B) It looses the frequency information

C) It looses time information some what

D) It retain time and frequency information

6) Heisenberg rectangles demonstrate

A) Time resolution

B) Frequency resolution

C) Time frequency resolution

D) Phase and frequency resolution

7) For reconstruction of CT images which transform is used

1. Wavelet transform
2. Radon transform
3. Gabor transform
4. Both Gabor and wavelet transform

8) Wavelet transform admissibility property means

A) A infinite support

B) A compact support

C) could be infinite and compact support

D) None of the above

9) Multi resolution analysis is possible using

1. Gabor transform
2. Wavelet transform
3. Fourier transform
4. Wavelet and Gabor transform

10) Directional information in an image with one pixel apart is derived using

A) Radon transform

B) Wavelet transform

C) Gabor transform

D) Wavelet and Radon Transform

11) If we double the value of sigma\_x and sigma\_y in spatial domain in Gabor filter then its frequency resolution

1. Become half of earlier
2. Remain as it
3. Exactly double of earlier
4. Does not depend of values of sigma

12) Magnitude of Fourier transform of translated object in image

1. translated by same amount of pixels
2. Remain same
3. Rotated by arbitrary angle
4. Translated by twice the number of pixels

13) If an object is rotated by angle theta then its Fourier transform

1. Remains same
2. Rotated by an angle theta+90 degrees
3. Rotated by theta
4. Get Translated

14) As per projection theory the magnitude of Fourier transform is

1. Maximum in a direction along the edge in an image
2. Maximum in a direction orthogonal to direction of edge in an image
3. Does not depend on direction of edge in an image
4. Minimum in a direction orthogonal to direction of edge in an image

15) A minimum of ——— degrees of resolution is possible in Radon transform

1. 2
2. 1
3. 5
4. 45

16) Any function can be used as wavelet function if it satisfies

1. Admissibility condition
2. Orthogonality condition
3. Both admissibility and orthogonality condition
4. Only orthonormality condition

17) In a pattern matching process, Feature selection ——-

1. retain only genuine features
2. Ideally Retain only genuine features and reduces the dimension of feature vector
3. Ideally it looses the genuine features
4. Only minimises the dimension of feature vector

18) Theoretically the future extraction technic delivers

1. Features which are robust to noise
2. Features which are robust to translation, rotation scale, noise
3. Features which are robust to translation, rotation scale, noise, illumination
4. Features which are robust to only translation, rotation and scale

19) Gabor transform cannot capture details at every pixels level, is it true

1. definitely Yes
2. No
3. Can be Yes or No
4. Definitely No

20) The Radon transform, functions as

1. Low pass filter hence minimising noise
2. High pass filter
3. Band pass filter
4. Could be low pass or high pass filter

Unit 5 Homogenous coordinates for Robotics

1. In a homogeneous 2D representation, if original coordinate vector is (1,0) and rotation of 45 degrees with no translation, the transformed coordinates are

A) 0.707, 0.707

B) 0.707,-0.707

C) -0.707,-0.707

D) 1,1

2. In a homogeneous 2D representation, if original coordinate vector is (1,1) and rotation of 45 degrees with translation (1,1), the transformed coordinates are

A) 0.707, 0.707

B) 1, 2.5

C) 1.707, 0.293

D) 0.293, 1.707

3. In a homogeneous 2D representation, if original coordinate vector is (1,0) and rotation of -45 degrees with no translation, the transformed coordinates are

A) 0.707, 0.707

B) 0.707, -0.707

C) -0.707, 0.707

D) -0.707, -0.707

4. In a homogeneous 2D representation, if original coordinate vector is (1,0) and with no rotation with translation (1, 1) , the transformed coordinates are

A) 2,1

B) 1,2

C) 2,2

D) 1,1

Unit 6

1. The goal of clustering a set of data is to

1. divide them into groups of data that are near each other
2. choose the best data from the set
3. determine the nearest neighbors of each of the data
4. predict the class of data

2. The k-means algorithm...

1. always converges to a clustering that minimizes the mean-square vector-representative distance
2. can converge to different final clustering, depending on initial choice of representatives
3. is widely used in practice
4. is typically done by hand, using paper and pencil should only be attempted by trained professionals

3. The choice of k, the number of clusters to partition a set of data into,...

1. is a personal choice that shouldn't be discussed in public
2. depends on why you are clustering the data
3. should always be as large as your computer system can handle
4. has maximum 10

4. Which of the following statements about the K-means algorithm are correct?

1. The K-means algorithm is sensitive to outliers.
2. For different initializations, the K-means algorithm will definitely give the same clustering results.
3. The centroids in the K-means algorithm may not be any observed data points.
4. The K-means algorithm can detect non-convex clusters.

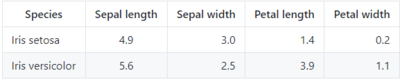
5. Considering the K-median algorithm, if points (0, 3), (2, 1), and (-2, 2) are the only points which are assigned to the first cluster now, what is the new centroid for this cluster?

1. (0,2)
2. (2,1)
3. (2,0)
4. (1,2)

6. Considering the K-means algorithm, after current iteration, we have 3 centroids (0, 1) (2, 1), (-1, 2). Will points (2, 3) and (2, 0.5) be assigned to the same cluster in the next iteration?

1. Yes
2. No

7. The Iris dataset contains information about Iris setosa and versicolor. What is the Euclidean distance between these two objects?

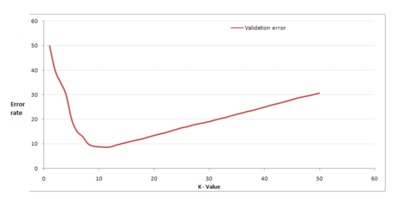


1. 2.8
2. 4.6
3. 22.6
4. -3.6

**8. k-NN algorithm does more computation on test time rather than train time.**

1. True
2. False

9. In the image below, which would be the best value for k assuming that the algorithm you are using is k-Nearest Neighbor.



1. 3
2. 10
3. 20
4. 50

**10. Which of the following option is true about k-NN algorithm?**

1. It can be used for classification
2. it can be used for regression
3. It can be used in both classification and regression

**11. Which of the following statement is true about k-NN algorithm?**

**1-**k-NN performs much better if all of the data have the same scale.

2-k-NN works well with a small number of features (X's), but struggles when the number of inputs is very large

3-k-NN makes no assumptions about the functional form of the problem being solved

1. 1 and 2
2. 1 and 3
3. Only 1
4. All of the above

**12. When you find noise in data which of the following option would you consider in k-NN?**

1. I will increase the value of k
2. I will decrease the value of k
3. Noise can not be dependent on value of k
4. None of these

13. What 2 subjects are neural networks usually associated with?

1. Geology & CHemistry
2. Geology & Biology
3. Chemistry & Artificial-engineering
4. Biology & Artificial-engineering

14. What are ANNs used for?

1. Reproduce Human Spinal Functions
2. Reproduce Human Foot Functions
3. Reproduce Human Nervous System
4. Reproduce Human Brain Functions

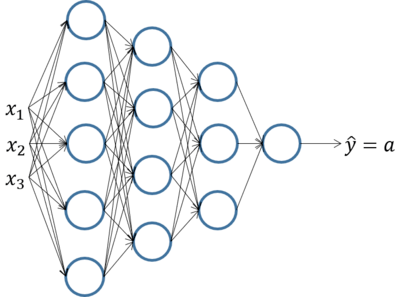
15. What are the Three Parts of a Neuron?

1. Dendrite, Saxon, Aoma
2. Gamio, Saxio, Dendrition
3. Dendrite, Soma, Axon
4. Dęndrìtē, Âxòn, Sómä

16. What if we would like to have prediction output (binary classification) represented by probability, which activation function is the best choice?

1. tanh
2. ReLu
3. Sigmoid
4. Linear

17. Given a deep neural network shown in the figure, what is the dimension of weight at the 3rd layer?



1. 5 x 4
2. 4 x 5
3. 4 x 3
4. 3 x 4

18. The most suitable activation function for hidden layer

1. Sigmoid
2. ReLu
3. Softmax
4. Tanh

19. \_\_\_\_\_\_\_\_\_ type of model, the **algorithm learns from a dataset which is labelled**, and the algorithm uses the answer keys to evaluate its accuracy on the training data.

1. **Supervised learning**
2. **UnSupervised learning**
3. **Reinforcement learning**

20. In this type of model, the algorithm learns and makes sense **by extracting features/patterns from the unlabelled dataset**provided (The system will evaluate by itself)

1. **Unsupervised learning**
2. **supervised learning**
3. **Reinforcement learning**

21. Information flows from

1. Input layer -> Hidden Layer-> Output layer
2. Feedforward Network
3. Backpropagation

22. Every Artificial Neural must have at least \_\_\_\_\_\_

1. **two layers**.
2. **three layers**.
3. **four layers**.

23. How many output layers are required for constructing an Artificial Neural Network?

1. 1
2. 3
3. 2