ML, DL Questions

1. How you can define Machine Learning?
2. What do you understand Labelled training dataset?
3. What are 2 most common supervised ML tasks you have performed so far?
4. What kind of Machine learning algorithm would you used to walk robot in various unknown area?
5. What kind of ML algo you can use to segment your user into multiple groups?
6. What type of learning algo realised on similarity measure to make a prediction?
7. What is an online learning system?
8. What is out of core learning?
9. Can you name couple of ml challenges that you have faced?
10. Can you please give 1 example of hyperparameter tuning wrt some classification algorithm?
11. What is out of bag evaluation?

- What do you understand by hard & soft voting classifier?

13. Let's suppose your ML algorithm is taking 5 min time to train, How will you bring down time to 5 second for training? (Hint: Distributed Computation)
14. Let's Suppose I have trained 5 diff model with same training dataset & all of them have achieved 95% precision. Is there any chance that you can combine all these models to get better result? If yes, How? If no, Why?
15. What do you understand by Gradient decent? How will you explain Gradient decent to a kid?

- Can you please explain diff between regression & classification?
- Explain a clustering algorithm of your choice.
- How you can explain ML, DL, NLP, Computer vision & reinforcement learning with example in your own terms?

19. How you can explain semi-supervised ML in your own way with example?
20. What is difference between abstraction & generalization in your own word.
21. What are the steps that you have followed in your last project to prepare the dataset?

- In your last project what steps were involved in model selection procedure?

23. If I give you 2 columns of any dataset, what will be the steps will be involved to check the relationship between those 2 columns?

24. Can you please explain 5 diff kind of strategies at least to handle missing values in dataset?

25. What kind of diff. issues you have faced wrt your raw data? At least mention 5 issues.

- What is your strategy to handle categorical dataset? Explain with example.

27. How do you define a model in terms of machine learning or in your own word?

28. What do you understand by k fold validation & in what situation you have used k fold cross validation?

- What is meaning of bootstrap sampling? explain me in your own word.
- What do you understand by underfitting & overfitting of model with example?
- What is diff between cross validation and bootstrapping?
- What do you understand by silhouette coefficient?
- What is the advantage of using ROC Score?

34. Explain me complete approach to evaluate your regression model

- Give me example of lazy learner and eagar learner algorithms example.
- What do you understand by holdout method?
- What is diff between predictive modelling and descriptive modelling.
- How you have derived a feature for model building in your last project?
- Explain 5 different encoding techniques.
- How do you define some features are not important for ML model? What strategy will you follow
- What is difference between Euclidian distance and Manhattan distance. Explain in simple words.
- What do you understand by feature selection, transformation, engineering and EDA & What are the steps that you have performed in each of these in detail with example.
- What is difference between single values decomposition (SVD) and PCA? (hint: SVD is one of the way to do PCA)
- What kind of feature transformations you have done in your last project?

45. Have you taken any external feature in any of project from any 3rd party data? If yes, explain that scenario.

- If your model is overfitted, what you will do next?
- Explain me bias variance trade-off.

- What steps would you take to improve accuracy of your model? At-least mention 5 approach. And justify why would you choose those approach
- Explain process of feature engineering in context of text categorization.
- Explain vectorization and hamming distance.
- Can you please explain chain rule and its use?
- What is difference between correlation and covariance?
- What are the sampling techniques you have used in your project?
- Have you ever used Hypothesis testing in your last project, if yes, explain How?
- In which case you will use naïve Bayes classifier and decision tree separately?
- What is the adv & disadvantage of naïve Bayes classifier, explain
- In case of numerical data what is naïve Bayes classification equation you will use?
- Give me scenario where I will be able to use a boosting classifier and regressor?
- In case of Bayesian classifier what exactly it tries to learn. Define its learning procedure.
- Give me a situation where I will be able to use SVM instead of Logistic regression.
- What do you understand by rbf kernel in SVM?
- Give me 2 scenarios where AI can be used to increase revenue of travel industry.
- What do you understand by leaf node in decision tree?
- What is information gain & Entropy in decision tree?
- Give disadvantages of using Decision tree
- List some of the features of random forest.
- How can you avoid overfitting in decision tree?
- Explain polynomial regression in your own way.
- Explain learning mechanism of linear regression.
- What is the cost function in logistic regression?
- What is the error function in linear regression?
- What is the use of implementing OLS technique wrt dataset?
- Explain dendrogram in your own way.
- How do you measure quality of clusters in DBSCAN?
- How do you evaluate DBSCAN algorithm?
- What do you understand by market basket analysis?
- Explain centroid formation technique in K Means algorithm.
- Have you ever used SVM regression in any of your project, If yes, Why?
- Explain the concept of GINI Impurity.
- Let's suppose I have given you dataset with 100 column how you will be able to control growth of decision tree?
- If you are using Ada-boost algorithm & if it is giving you underfitted result What is the hyperparameter tuning you will do?
- Explain gradient boosting algorithm.
- Can we use PCA to reduce dimensionality of highly non-linear data.

- How do you evaluate performance of PCA.
- Have you ever used multiple dimensionality techniques in any project? if yes, give reason. If no, where can we use it?
- What do you understand by curse of dimensionality explain with help of example
- What is the difference between anomaly detection and novelty detection
- Explain gaussian mixture model.
- Give me list of 10 activation functions with explanation
- Explain neural network in terms of mathematical function
- Can you please corelate a biological neuron and artificial neuron?
- Give list of cost functions you heard of, with explanation.
- Can I solve problem of classification with tabular data in neural network?
- What do you understand by backword propagation in neural network?
- Why do we need neural network instead of straight forward mathematical equation?
- What are the different weight initialization techniques you have used?
- Can you visualize a neural network? if yes provide name of software we can use?
- How will you explain training of neural network?
- Can you please explain difference between sigmoid & tanh function.

100. Explain disadvantage of using RELU function.
101. How do you select no. of layers & no. of neurons in neural network?
102. Have you ever designed any Neural network architecture by yourself?
103. Can you please explain SWISS Function?
104. What is learning rate in laymen way and how do you control learning rate?
105. What is diff between batch, minibatch & stochastic gradient decent.
106. What do you understand by batch size while training Neural N/w with example
107. Explain 5 best optimizer you know with mathematical explanation.
108. Can you build Neural network without using any library? If yes, prove it.
109. What is use of biases in neural network?
110. How do you do hyper-parameter tuning for neural network
111. What kind of regularization you used wrt neural network.
112. What are the libraries you have used for neural network implementation?
113. What do you understand by custom layer and a custom model?
114. How do you implement differentiation using TensorFlow or Pytorch library?
115. What is meaning of epoch in simple terms?
116. What do you understand by a TensorFlow record?
117. Explain the technique for doing data augmentation in deep learning
118. List down diff CNN network you heard of.
119. List down a names of object detection algorithm you know
120. What is difference between object detection and classification?

121. List down major tasks we perform in CNN.

122. List down algorithms for segmentation

123. Which algorithm you can use to track a football in football match.

124. If I give you a satellite image data, so which algo you will use to identify image from those image data

125. Which algorithm you will use for PCB fault detection.

126. What do you understand by pretrained model?

127. Explain different types of transfer learning.

128. Explain me where your CNN network will fail with example. And where we can use RNN network.

129. Which GPU you have been using to train your object detection model?

130. How much data set you have used for this model, what was epoch, time and accuracy of the model

131. What kind of optimization you have done for training object detection model

132. How do you evaluate your object detection model?

133. List down algorithm for object tracking

134. What do you understand by FPS (frame per second)?

135. Can you please explain 2D & 3D convolution?

136. What do you understand by batch normalization?

137. Which algorithm you use for detecting handwriting detection?

138. Explain me SoftMax function.

139. What is disadvantage of using RNN?

140. List down at least 5 RNN?

141. Explain architectural diagram of LSTM, Also list Adv & dis adv

142. Explain architectural diagram of BI LSTM, Also list Adv & dis adv

143. Explain architectural diagram of stacked LSTM. Also list Adv & dis adv

144. What do you understand by TF-IDF

145. How you will be able to create a Word 2 vector of your own

146. List down at least 5 vectorization technique.

147. What is difference between RNN and Encoder-Decoder.

148. What do you understand by attention mechanism and what is use of it

149. Have you read a research paper Attention you all need? If not, then why you are claiming you know NLP

150. What do you understand by multi headed attention? explain