

30 Day ML Interview Prep Plan

Copyright © Machine Learning Plus. All Rights Reserved.

So you have decided to start giving interviews for ML/Data Science positions. That's great. This guide is here to help. Use this guide to know what to expect, types of interview rounds, what topics to learn, questions asked during interviews in order to plan and be better prepared.

First, let me walk you through what to expect in Data Science / ML interviews so you will know how you can go about preparing for them.

Table of Contents

[Types of ML Interview rounds you can expect](#)

[Topics to Learn - The 4 week Plan](#)

[Revision Questions](#)

[Python Programming \(Hands on\)](#)

[SQL](#)

[Probability](#)

[Statistics](#)

[Machine Learning General Concepts](#)

[Gradient Descent](#)

[Machine Learning Algorithms](#)

[Logistic Regression](#)

[Linear Regression](#)

[Decision Trees](#)

[Naive Bayes](#)

[Random Forests](#)

[SVM](#)

[Time Series](#)

[Deep Learning](#)

[Behavioral Questions](#)

Types of ML Interview rounds you can expect

Typically when recruiting for Data Science roles, companies typically conduct 4-7 rounds of interviews which can change from org to org. These rounds are typically of the following types:

1. Screening round

This can be a short 15-30min conversation to quickly gauge if you will be a suitable fit. Sometimes, this can be a coding round where you are given a link to an online coding test / MCQ and you will get shortlisted for the next round based on the score you get there. In case you are going through a referral, there is a chance this round may sometimes be skipped altogether.

2. Technical Rounds

There can be one or more technical rounds where your technical skills may be tested. These rounds may contain the following types of questions:

- a. **Data Structures and Algorithms:** This is usually the case for entry level positions and is quite effective in testing the individual's problem solving and coding skills. This may be skipped by companies for experienced positions.
- b. **Probability and puzzles:** Usually probability questions and puzzles may be asked. The focus here is to demonstrate your ability to think through the problem analytically even though you may or may not perfectly solve it.

- c. Statistics:** Expect questions from basic statistics and advanced concepts related to the machine learning process.
- d. Machine Learning Algorithms:** These can be theoretical questions about how various ML algorithms work, explaining some of the general machine learning concepts and terminologies like bias-variance trade off, what is entropy etc and what if questions to judge your depth in understanding the various ML algorithms. This is typically a key round, where you demonstrate the depth of your ML knowledge.
- e. Open ended Case Problems:** These are typically open ended case problems that the company might've faced and how you go about solutionizing it. The interviewer is mostly interested to know your product sense and if you are able to design solutions that will be practical and relevant to their business setting.
- f. Coding Rounds:** You can expect at least 1 coding round, which could be **proctored live** or be given as a **take home assignment** which needs to be submitted in a few days. If it is a take home assignment there will usually be a follow up discussion to go over the approach if the panel was interested in your submission, which is usually sent as a Jupyter notebook.
- g. Past Projects Discussions:** This involves a detailed discussion on the work done in your past companies. You need to be absolutely clear of the work you

did in your projects, especially the most recent ones. If given a chance to pick your most challenging project, pick one that demonstrates your knowledge well, one that was actually deployed.

Few words of advice

(1) When you start explaining a project, don't directly jump into the technical details. Assume the interviewer does not know anything even though you may have written a fair deal about it in the resume. Always give the high level objective and the context behind the project before you jump into the details.

(2) Don't be afraid to go into the technical details (provided you have given the context). This not only showcases your technical abilities but also your communication / articulation skills. Bonus points if you are able to explain complex topics well.

3. Behavioral Round

Just don't mess this one up. Following are some general tips to go through this smoothly. Avoid over-explaining yourself or speaking low about yourself. The interviewer just wants to know if you are a normal person and your motivation to apply for this job.

They want to know if you are passionate about the role, the company and the industry in general. To make sure they are hiring the right person who will be happy and succeed in this role. You can prepare for this round with business friendly responses

4. Salary Negotiation

You will have more leverage based on your performance in the various rounds.

Usually if you do really well in the technical rounds, the company might be willing to pay a premium to get you onboard.

For companies who have strict parity rules for various levels of roles, you can only negotiate so much with respect to the salary. Because, various levels typically have an upper limit and a lower limit. This is also usually good to promote an equitable work environment.

Things you might want to consider while negotiating:

1. The fixed vs variable component of the salary.
2. Amount of ESOPs given out
3. If the company is not publicly listed, how to encash the shares?
4. How long do people typically need to wait before getting promoted
5. Joining Bonus
6. Relocation cover / bonus.
7. Will you be eligible for the next appraisal in the new organization?

Things to consider in general, in case you have multiple job offers:

1. Value of Insurance cover
2. Leave encashment policy
3. Leave policy (does the company give paid vacations)
4. Work from home options

5. Percentage year-on-year increments given out in general
6. Notice period given

5. Senior management round

This is usually for senior Data Science positions, especially since you will likely work with multiple stakeholders in your organization and bring significant value to the table.

This round is usually more of a welcome conversation, than an interview. The management typically wants to get a feel of the caliber of the individual before you get onboard. This is a great chance to make a first good impression so present your best self here.

6. Offer Rollout

This is it. Congratulations!

Topics to Learn - The 4 week Plan

If you have to prepare for an interview within a short period of time, below is an overview of the core ML concepts you might want to cover.

High Level Areas

1. Probability and Statistics
2. Machine Learning Algorithms
3. Time Series Analysis and Forecasting
4. Deep Learning

- a. Neural network concepts
 - b. NLP
 - c. Computer Vision
- 5. Deployment
- 6. Programming
 - a. Python / R
 - b. SQL
 - c. Big data (pyspark, dask)

Let's review some of the favorite interview topics that should be quickly covered in each area. Considering the limited preparation time you have for preparation, consider these as the core essential you need to cover. Try NOT to memorize anything, but only understand the concept / purpose behind it.

Assuming you have a prior understanding / exposure to the concepts, the following may be completed in about 4-5 weeks time. Amongst this, you might want to allot considerable time for the statistics, machine learning and deep learning topics. Review and try answering the revision questions for the corresponding week's topics.

Week 1

1. Probability and Statistics

Sample vs Population • Measures of Central tendency and Dispersion •
Law of large numbers • Central Limit Theorem • Joint and conditional
probability • Bayes Theorem • Frequency Distributions • Normal
distribution • Probability Density Function • Probability Mass function •
Hypothesis testing • Type 1 and Type 2 error • P-values • Confidence
interval calculation • T-Test • Chi-Squared Test • ANOVA, Standard
Error

2. Machine Learning Concepts

Generative vs Discriminative models • Cross Validation, OOB error •
Bias-Variance Tradeoff • R-Squared • Adjusted R-Squared • RSS • TSS
• Forward Selection • Backward Selection • Box-Cox Transforms •
Entropy • Information Gain • Gini Index • Binary Cross Entropy •
Variance Inflation Factor • Assumptions of Linear regression •
Heteroscedasticity • Sigmoid function • Softmax • Cost Function •
ROC Curve • Precision-Recall • Confusion Matrix and related concepts •
Imbalanced Classification • Effect of outliers • Missing value treatment
approaches • Expectation Maximization Algorithm • Maximum Likelihood
Estimation

Week 2

3. Machine Learning Algorithms

Linear Regression • Logistic Regression • Decision Trees • Gradient Boosting • Adaboost • Random Forest • SVM • k-Nearest Neighbors • Gradient Descent • k-Means Clustering • Hierarchical Clustering • Principal Components Analysis • Regularization • Ridge and LASSO regression • Naive Bayes • XGBoost

Note: Know the key hyper parameters of various algorithms and its purpose.

Stretch: Variations of decision trees such as: ID3 • C4.5 • CART •

CHAID • MARS • CRF • HMM • Gaussian Mixture Models •

CatBoost • LightGBM.

4. Time Series Analysis and Forecasting

Time Series Decomposition methods • Stationarity • Tests for stationarity • ACF • PACF • Seasonality • Various Features for Time series • Moving Average • Exponentially Weighted Smoothing • Holt-Winters approach • ARIMA family of models • Evaluation Metrics like R-squared • MAPE • MAE • MSE • Prophet library • Auto Arima.

Week 3

5. Deep Learning

Multi Layer Perceptron • Activation functions • Gradient Descent •
Forms of Gradient Descent • Back Propagation • Chain Rule • L1 and L2
Regularization • Dropout layer • Early stopping • Optimizers like
RMSProp • AdaGrad • Adam • Batch Normalization • Convolutional
Neural Nets • Pooling • Flattening, Autoencoders • Transfer learning •
Tasks in Sequence modeling • Recurrent Neural Networks • GRU •
LSTM • Bidirectional Recurrent Neural Networks • Encoder-Decoder
Architecture • Transfer learning • Transformers,

6. NLP

Tokenization • Stemming • Lemmatization • BagofWords • TF-IDF •
Cosine Similarity • Jaccard distance • Edit Distance • Topic modeling
(LDA, LSI, NMF) • Document Term matrix • Dependency Parsing •
Named Entity Recognition • Word2Vec • GloVe • Transformers • BERT

Week 4

7. Programming Proficiency

Languages: Python • SQL • R Programming • Julia (Optional)

Frameworks: Scikit-Learn • Tensorflow/PyTorch • Statsmodels • PySpark
• Numpy • Pandas • Matplotlib

Deployment: Hosting ML as Flask App / Fast API / Django apps. Optionally one of the following: Amazon Sagemaker, KubeFlow, Azure ML, Vertex AI by Google Cloud.

Want to get started with ML?

Get started with [MachineLearning+ Complete ML Path](#)

This learning path is a series of bite sized courses that clearly explains the basic to advanced ML concepts in simple, crystal clear teaching. You will enjoy learning the concepts, solve numerous ML and coding examples, build industrial ML projects and deploy them. Build a compelling profile for ML jobs, Get certified.

Revision Questions

1) Python Programming (Hands on)

a) Core Python

1. How to write Python Functions
2. What is the purpose of keyword arguments? (*args, **kwargs)
3. What are lambda expressions?
4. Explain briefly the purpose of Generators
5. What do Iterators do?
6. What purpose do decorators serve in Python?
7. How do you go about writing modules and packages?
8. How to work with virtual environments (conda, pipenv)

b) OOPs concepts

1. Explain Class inheritance and Polymorphism
2. What is the meaning of encapsulation?
3. Name few dunder methods and its purpose
4. Class methods and static methods
5. What is the purpose of constructors in python objects?
6. When do you add the `super` method in a class?
7. What is the true purpose of `@property`
8. What does `__name__ == "__main__"` do?

c) Data Wrangling with Numpy / Pandas / Matplotlib

Numpy

1. Create a random numpy array
2. How to create random numbers of specific dimensions in Numpy?
3. What is the main difference between Numpy and Pandas? Why not do everything using NumPy?

Pandas

1. What are the different types of data structures in Pandas?
2. How do you create a Dataframe and Series?
3. How to rename columns?
4. How to make an index into a column and vice versa?
5. How do you parse datetime data in Pandas?
6. How to find the count of unique values in Pandas?
7. Why and how do you use groupby functions in Pandas?

Matplotlib

1. How do you create a scatter plot in matplotlib?
2. How do you adjust the resolution of the plot?
3. How do you create a figure with 4 plots inside it?
4. Explain briefly about the two types of syntaxes in Matplotlib
5. How do you create a line plot with 2 Y axis?
6. How do you make a plot with 2 graphs side by side?

d) Python revision questions:

1. What is PEP8 and why is it important?
2. What is a Scope?
3. What is the difference between lists and tuples?
4. What is break, continue and pass in Python?
5. What is the purpose of using `__init__()` in Python?
6. What is a docstring and how to write one?

7. What is the difference between a .py file and a .pyc file?
8. What is pickling?
9. What is PYTHONPATH?
10. How do you reverse a string in Python?
11. How do you access a parent from a child class?
12. How to create an empty class?
13. What are lambda functions? How do you create one?
14. What is the difference between shallow copy and deep copy?

2) SQL

1. What is a Primary key?
2. What is the difference between a Primary key and a unique key?
3. What is a Foreign Key?
4. What are window functions in SQL?
5. What is a Join in SQL?
6. What does a Full Join do?
7. What is a Self Join?
8. Explain Cross Join in SQL
9. What is an Index?
10. What is a subquery in SQL and what are its types?
11. What does a HAVING Clause do?
12. What is the difference between a WHERE clause and HAVING Clause?
13. Explain the different types of relationships in SQL?
14. (1-to-1, 1-to-many, many-to-1, many-to-many, self referencing)
15. What is an Alias in SQL?
16. What is a View?
17. What is Normalization and Denormalization?
18. What is the difference between DROP and TRUNCATE?
19. What is the difference between TRUNCATE and DELETE command?
20. What is a User defined function and what are the various types?

3) Probability

1. What is a probability distribution?
2. What is the difference between a discrete and continuous variable?
3. What is conditional probability?
4. What is a probability density function?
5. What is a probability mass function?
6. What is the difference between a Bernoulli distribution and Binomial distribution?
7. What is the difference between correlation and covariance?
8. What is the Bayes Theorem?
9. What is a Poisson process?
10. How can you calculate confidence intervals without using a ready-made formula?
11. Explain the difference between a permutation and combination
12. What is the difference between independent and dependent events?

Probability Puzzles Examples:

1. What is the expected number of cards to be drawn from a deck before seeing the first queen?
2. How many times would you expect to roll a die before seeing the first six?
3. How many coin flips would you expect before seeing two consecutive heads?
4. What is the expected number of rolls needed to see all 6 sides of a fair die?
5. Bag A has 12 red cards and 12 black cards. Bag B has 24 red cards and 24 black cards. You draw two cards at random from one of the two bags, one

card at a time. Which bag has a higher probability of getting cards of the same color and why? (Ans: Bag B)

6. In an election, there are four candidates: A, B, C, and D. Based on exit polls, A has a 20% chance of winning, while B has a 40% chance. What is the probability that A or B wins the election? (Ans: 0.6)
7. A jar holds five lollipops: three red and two yellow. If you remove and replace three lollipops after every draw, find the probability of drawing the same color lollipop twice.
8. In how many ways can you split 12 people in 3 teams of four?
9. If three friends in London told you it's raining, and there is a $\frac{1}{3}$ probability that each person is lying, what's the probability that it's raining in London? The probability of rain on any day in London is 0.25

Resources: [\[1\]](#)[\[2\]](#)[\[3\]](#)

4) Statistics

L1:

1. What are the measures of central tendency and dispersion?
2. What is IQR?
3. You are given a continuous variable. How do you check if a given datapoint is an outlier?
4. What is a Normal Distribution and what is its significance?
5. What does the law of large numbers say?

L2:

1. What is the 68 - 95 - 99.7 rule for a Normal Distribution?
2. What is Hypothesis testing and how does it work?
3. Explain confidence intervals to a non-technical project member.
4. Explain p-value in layman's terms
5. How would you derive confidence intervals for the measurements
6. What is ANOVA
7. What is the t Test?

8. What is Mahalanobis distance and what are some of its applications?
9. How is Mahalanobis distance used for outlier detection?
10. What is the purpose of the Chi-Sq test?
11. What is KL Divergence
12. What is Shannon-Jensen Divergence?
13. Explain the central limit theorem in simple terms

L3:

1. What is the difference between MLE and MAP?
2. What is the difference between standard deviation and standard error?

5) Machine Learning General Concepts

L1:

1. When is feature selection important in machine learning?
2. What are the methods to calculate feature importances in machine learning?
 - a. For Random Forests
 - b. For Linear regression
3. What is the need to split your dataset into training and test data?
4. What is the purpose of validation and holdout datasets in machine learning?
5. What is the difference between Normalization and standardization?
6. What are your favorite libraries for building ML models?
7. When do you say a ML model is overfitting?
8. What is Bias-Variance tradeoff in machine learning?

L2:

1. What are some of the ways to deploy machine learning models?

2. What are some of the ways to interpret machine learning models, agnostic of the algorithm used?
3. What is the use of Partial Dependence plots?
4. What are SHAP values and what is the intuition behind it?
5. What is the difference between OOB score and Validation score?
6. Compare and contrast the Bias variance tradeoff of a couple of ML algorithms of your choice (or let's say, Random Forest vs Decision Trees).
7. What is the difference between discriminative vs generative algorithms?
8. How would you calibrate probabilities of a classification model?

6) Gradient Descent

- a) What is the Gradient Descent algorithm used for?
- b) What are the 3 variations of Gradient Descent?
- c) What is the Gradient in Gradient Descent?

Machine Learning Algorithms

7) Logistic Regression

L1:

1. What is a logistic function? What is the range of values of a Logistic function?
2. Why is Logistic regression widely used? What's special about it?
3. What is the formula for the logistic regression function?
4. What are Odds?
5. Why can't linear regression be used in place of Logistic regression for binary classification?
6. What is accuracy score? Is it any good for classification problems?
7. What is a confusion matrix?
8. What are some good metrics to use to evaluate classification models?
9. What is Sigmoid squashing in Logistic regression?

L2:

10. What is the loss function for logistic regression?
11. What is the ROC curve?
12. How do you find the optimal cutoff using the ROC curve?
13. What is Concordance and Discordance? Why is it not so widely used as other metrics?
14. What is the importance of a baseline model in classification problems?
15. What are False positives and False negatives?
16. What is Precision and Recall? What are the advantages and disadvantages?
17. What is Sensitivity and Specificity?
18. What is the F1 score? What is special about it?
19. What is the formula for True Positive Rate, True Negative Rate, False Positive Rate and False Negative Rate?

L3:

20. Why can't we use Mean Squared Error (MSE) as a cost function in Logistic regression?
21. How do you check for multicollinearity in Logistic regression?
22. What is McFadden's Pseudo R-Squared? How is it calculated?
23. How is Statsmodels API different from Scikit-Learn API for Logistic regression?
24. What is Wald's test statistic?
25. What is KS-Statistic? How is it used in industry for classification models?
26. Between Binary Cross entropy and Area under the ROC curve, which one is better for evaluating classification models? Why?

8) Linear Regression

L1:

1. What is Linear Regression?
2. What is the general equation for Linear regression?
3. What is the cost function in linear regression?
4. How to tell the goodness of fit for a linear regression model?
5. What is Adjusted R Squared?
6. What does the Q-Q plot tell us?
7. How do you find the outlier observations in Linear regression?
8. What is Heteroscedasticity and how do you detect it?
9. How to make amends in the presence of Heteroscedasticity.
10. What is the Cook's Distance? and why is it used?
11. How does stepwise regression work?
12. How does Best Subsets regression work?
13. What is AIC and BIC score?
14. What is multicollinearity and what are its consequences in a model?
15. How to check for multicollinearity?

L2:

1. You've built a linear regression model, what are some of the things you will quickly check to make sure the model is a good fit?
2. Given a dataset with a Y and multiple X variables, elaborate your approach to reach the best model?
3. Say you are building a linear regression model which has some of the predictors correlated with each other. How does it affect the results of linear regression? How would you deal with the problem?
4. Say you have observed heteroscedasticity in your linear regression model. Why does it affect your results? What steps would you try out to fix it?
5. In what situation would you build a linear regression model without intercept?
6. You've built a linear regression model and you observe that the errors on the predictions are all positive with a mean of 5 units. What do you do?
7. The MSE on training data is far lesser than the MSE on test data. Why could this happen? What would you do to fix it?

8. Why can't we use Mean Square Error (MSE) as a cost function for logistic regression?

9) Decision Trees

L1:

1. Explain what is a Decision Tree and the steps involved?
2. What are the components of a Decision tree?
3. Why is Decision trees considered a greedy algorithm?
4. What is a pure node in a Decision tree?
5. What are the control parameters in a Decision tree?
6. What are some of the disadvantages of using Decision trees? How would you overcome them?

L2:

1. How is a split in a Decision tree decided?
2. What is Information gain?
3. Explain Gini Impurity and Entropy. Is there any advantage of using Gini impurity over Entropy?
4. What can cause overfitting in a decision tree?
5. How is Decision trees for regression different from Decision trees for classification problems?

L3:

1. What are the different variations of the Decision trees algorithm?
2. How do you prune a decision tree in Python?
3. How is the CART algorithm different from ID3 Decision trees?
4. Explain CHAID algorithm for decision trees
5. Explain C4.5 algorithm

10) Naive Bayes

L1:

1. What is the Bayes theorem all about and explain it's formula.
2. Explain Naive Bayes classifier in simple terms? What does it try to achieve?
3. What is the formula for Naive Bayes?
4. Why is the word 'Naive' used in the Naive Bayes classifier?
5. What is an advantage of using Naive Bayes classifier in live deployments?

L2:

1. What is the Laplace correction used in Naive Bayes meant for?
2. Is Naive bayes considered a generative classifier or a discriminative classifier?
3. Explain posterior probability and prior probability in layman's terms
4. Define Naive Bayes in terms of Posterior, prior, likelihood and evidence.
5. What are the different types of Naive Bayes classifiers? (Ans: Multinomial, Bernoulli and Gaussian)
6. What are the major disadvantages of Naive Bayes? (Ans: Zero frequency problem: a category not present in training set, and assumption of independence of variables)

L3:

1. How does Naive Bayes compute the likelihood for numerical variables?
2. How does Naive Bayes handle the problem of very small likelihood probabilities when multiplying, in presence of a large number of variables?
3. How does Naive Bayes handle zero division error ?

11) Random Forests

L1:

- a) Explain the steps in the Random Forest algorithm
- b) Describe the BAGGING method in simple terms

- c) What is a bootstrapped sample?
- d) What are the useful hyper parameters in Random Forest?
- e) Is it possible to parallelize the Random Forest algorithm?
- f) How is feature importance calculated in Random Forests?
- g) What approaches would you take to improve the performance of the Random Forest model?

L2:

- h) How does Random Forests handle missing values?
- i) What would happen if you simply do a random sampling instead of bootstrapped sampling in Random Forest?
- j) How is a Random forest different from a Decision tree? How are they different from a Bias - Variance tradeoff perspective?
- k) What effect does Random Forest have on the variance? Why?

L3:

- l) What is meant by Proximity in Random Forest?
- m) How do you compute Gini importance in Random Forest? How is it different from the permutation importance method?
- n) How is Random Forest different from the Isolation Forest algorithm? Is there even a connection?
- o) How is the Random Forest different from the ExtraTrees algorithm?

12) SVM

L3:

1. Explain SVM to a lay person?
2. Explain support vectors in support vector machines.
3. What is a hard margin and soft margin in SVMs?
4. What is Hinge Loss? Why is it relevant for use in SVM?
5. Explain the importance of Kernel trick in SVM
6. What is the role of C hyper parameter in SVM?

7. What are the different types of Kernel functions commonly used in SVM?
8. How do you formulate SVM for a regression problem?
9. What affects the decision boundary in SVM?
10. Explain the role of slack variable
11. What is the dual and primal problem and how is it relevance in SVM?
12. Is SVM sensitive to feature scaling?
13. An RBF Kernel based SVM classifier seems to underfit the training dataset.
Should you increase or decrease the hyper parameter gamma?
14. What is a polynomial kernel in SVM?
15. What is the RBF kernel?
16. What are some advantages of SVM?
17. Compare SVM and K-Nearest Neighbours (based on boundaries, bias-variance tradeoff)
18. Compare SVM and Logistic Regression in handling outliers
19. What is the difference between classification vs regression in SVM?
20. What are the main hyperparameters you need to consider when creating a SVM classifier?
21. How does the value of Gamma affect SVM?

Resources: [1](#), [2](#), [3](#)

13) Time Series

L1:

1. How would you parse time series data in Python?
2. What is a stationary time series?
3. What approaches would you take to make a non-stationary time series stationary?
4. What is ARIMA forecasting method?
5. What do we make a time series stationary when using ARIMA forecasting?

6. Given a time series data, what are some of the analysis step would you do?
7. What are the typical components of a time series?
8. How do you decompose a time series into its components?
9. What are some of the popular time series decomposition methods?
10. How do extract the trend of a time series?

L2:

11. How do you extract the seasonal index of a time series?
12. What are some of the features you can derive out of a time series?
13. What is autocorrelation function and its significance?
14. What is partial autocorrelation and its intuition?
15. How to calculate the partial autocorrelation?
16. How do you check for seasonality in Time series?
17. How do you deal with outliers in a time series ?
18. Name some statistical tests to check the stationarity of time series?

L3:

19. What is Dynamic Time warping?
20. What are some commonly used similarity methods used for sequence data?
(A: Edit distance, match-based measure, Longest common subsequence, Euclidean)
21. Explain briefly how ARIMA forecasting works to a lay person
22. When do you go for Vector autoregression method (VAR) for forecasting?
23. How do you cross validate the results of Time series forecasts
24. What is the difference between Exponential smoothing and Holt winters method?
25. What are some of the disadvantages of Holt-Winters method
26. Name a few time series forecasting methods. Compare and contrast their advantages and disadvantages.

14) Deep Learning

L1

1. What is Deep Learning? Why is it called 'Deep'?
2. What is the difference between deep learning and machine learning?
3. How would you design a logistic regression using neural nets?
4. What is the purpose of using activation functions in neural networks?
5. Name few activation functions you've used
6. Can you design a linear regression model using neural networks?
7. Is normalization of input data necessary in deep learning?
8. What would happen if all the weights are initialized to the same value?
9. What is back propagation and what is its significance in deep learning?
10. How does backward propagation work?
11. Explain chain rule in simple terms

L2:

12. What purpose does Batch normalization serve?
13. Why does Convolutional Neural Nets perform better when it comes to image data?
14. What are the advantages of CNN over MLP for Image data?
15. Why use RNN for text data?
16. If the image dimension is 10×10 and filter size is 12×12 , what is the size of the output? Hint: $(n - f + 1) \times (n - f + 1)$
17. What does Exploding and Vanishing gradients mean?
18. Name a few applications of Transfer learning in Deep Learning.

L3:

19. How does LSTM solve the vanishing gradient problem?
20. Why is GRU faster than LSTM?
21. Explain the architecture you used for one of your deep learning projects

Behavioral Questions

1. Why do you want to work here?
(Show how you are passionate about the employer's product / brand / service, you like the responsibilities of the job and how you'd enjoy it, given your skills and experience see how you will succeed in the role and do a great job at it.)
2. Tell me about an original algorithm you've created. How did you use it at work?
3. Tell me about a tough challenge you faced in your DS projects. How did you go about resolving it?
4. Tell me about a time when you had faced issues with stakeholders in your projects. Follow up with how you resolved it.
5. Do you contribute to open source?
6. Why do you think you will be a good fit for the role?
7. What are some of the best practices you follow when handling Data Science projects.
8. What do you think are the 3 best qualities Data Scientists should have?
9. How would you explain your technical Data Science results to a non-technical audience who might not have a knowledge of DS ideas?
10. What motivated you to take up Data science / ML as a career?
11. How do you measure the performance of ML/AI projects?
12. What is your idea of a great work environment?
13. Can you describe a time when you displayed leadership at the workplace?