MARCH 2024

AI and DS

1. My friend got asked about deadlocks and partitioning
2. I got kmeans and supervised and supervised learning
3. Deadlock
   Mutual exclusion
   Indexing
4. // DS
   CAP theorem question
   Physical vs Logical clock
   // AI
   Logistic regression
   Genetic Algorithm
5. Linear polynomial reg
6. Neural network, forward, backward
7. Explain Bias variance tradeoff in context to linear regression and genetic algo
8. Explain boxplot and correlation.
   Explain openmp vs mpi vs gpu

9. **Time in distributed systems Lamport clock, Christian and Berkeley algorithms.**
   question 1 - Indexing How index improve the response? Where are indexes stored if a database is running? Complexity of indexing methods. When column should be indexed? Why do we not index all columns? B+tree, hash, bitmap, map/reduce
   draw sigmoid function and write its equation. what are the parameters and asks what are the similarities between linear and logistic regression? how do you combine cost function and the hyperparameters? how do you minimize the cost function. what algorithm do you use to minimize the cost function? what is bias and variance and draw an example. what is MSE and what is its relationship to this topic. what is the complexity and its relation to variance?

TF

1. **The Gradient Descent and explains the basics on an example well. what is the formula of Gradient Descent. what is the "alpha? what is constrained optimization? what is the geometrical meaning of the gradient. why you take negative gradient**

2. **Clustering, low-dimensional representation of high-dimensional data, data compression, (Principal Component Analysis (PCA), SVD, t-SNE, Self Organizing Maps). what is the difference between super/unsupervised ml. s what**

is the principle of K-means and how are the cluster assigned. s how do you determine the correct number of classes. what is on the axis of elbow method

March 2023

1. valdman asked about SVD and matrix decompositions
   one DIT guy asked about gradient descent
   and the last question was about clustering and the self organizing maps... but I had no idea about SOM
2. Man they asked me about Correlation and I kinda messed up the definition
3. Math professor asked to explain all the optimization topics
4. The one from DIT asked me how we evaluate a classification model and about the k-fold validation
5. The usb guy asked me to describe histogram, box and whisker and correlation

September 2023

1. Part 1: Info Theory

Questions from dependency

2. Part 2: Advanced Machine Learning

Bias Variance Trade-off + Gradient Descent

3. Part 3: Parallel Programming

Questions about shared vs distributed memory + GPU memory architecture

4. Explain the concept of dependency and then he kept on going around it from different angles
5. So basically, they pick a point number from a particular subject then keep on asking for details
   Linear and polynomial Data dependency
   Mutual information
   SVD ... PCA

   Regularization... Variance. Bias ...
   Linear regression

   SQL vs No SQL ... Which is used for what ...
   Which database to store Image data and why