LightGBM

THEORY

1) LightGBM, short for light gradient-boosting machine, is a free and open-source distributed gradient-boosting framework for machine learning. It is based on decision tree algorithms and used for ranking, classification and other machine learning tasks.
2) The framework uses a leaf-wise tree growth algorithm, which is unlike many other tree- based algorithms that use depth-wise growth. It will choose the leaf with max delta loss to grow. Leaf-wise tree growth algorithms tend to converge faster than depth-wise ones.
3) However, they tend to be more prone to overfitting when Number of data points is small, so LightGBM includes the maxdepth parameter to limit tree depth. However, trees still grow leaf-wise even when maxdepth is specified.
4) LightGBM uses histogram-based algorithms, which bucket continuous feature (attribute) values into discrete bins. LightGBM sorts the histogram (for a categorical feature) accord- ing to its accumulated values and then finds the best split on the sorted histogram. This speeds up training and reduces memory usage

QUIZ

1) What are the advantages of LightGBM?
2) What are the disadvantages of LightGBM?

ANSWER

1) Faster training speed & higher efficiency, lower memory usage & better accuracy.
2) Again can lead to overfitting as it produces much complex trees & is senstive to overfitting over small data.