**A quick overview on Solver which pairs algorithms with machine learning.**

A solver is an algorithm that is used to optimize a machine learning process to create models. It is used to find the best solution for a problem by changing the parameters of a model. The solver is responsible for finding the optimal weights for the model by minimizing the loss function. There are different types of solvers available in machine learning such as:

1. Stochastic Gradient Descent (SGD), Adam, and
2. Limited-memory Broyden–Fletcher–Goldfarb–Shanno (L-BFGS)
3. Liblinear
4. Newton-cg
5. Newton-Cholesky
6. Sag
7. Saga

But for the purpose of this Assignments, we will compare and contrast between only two types of solvers for logistic regression (i.e., Lbfgs and Liblinear). Logistic regression is a machine learning technique that can be used to classify data into different categories based on a linear combination of features. However, finding the optimal parameters for the linear combination can be challenging, especially for large datasets. This is where solvers come in. Solvers are algorithms that try to minimize the cost function of logistic regression, which measures the error between the predicted and actual outcomes.

Lbfgs stands for Limited-memory Broyden–Fletcher–Goldfarb–Shanno algorithm. It is a quasi-Newton method that uses both first and second order derivatives of the cost function to find the optimal parameters. It is recommended for small datasets, because it can converge faster and more accurately than other solvers. However, for larger datasets, it can be slow and memory-intensive, because it needs to store and update a large matrix of second order derivatives.

Liblinear stands for Library for Large Linear Classification. It is a linear solver that uses a coordinate descent algorithm to optimize the cost function. It is suitable for large datasets, because it can handle sparse data and scale well with the number of examples. However, it can be less accurate than lbfgs, because it only uses first order derivatives and does not take into account the curvature of the cost function.

In conclusion, Lbfgs and Liblinear are two different solvers for logistic regression that have different strengths and weaknesses. Depending on the size and characteristics of the data, one solver may perform better than the other. Therefore, it is important to experiment with different solvers and compare their results before choosing the best one for a given problem.