# Lab Assignment 8: Optimization for Machine Learning

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(1) Consider the 2 column data set. Write code for linear regression using gradient descent method. Choose $f(\beta) = \frac{1}{2N}\sum_{i=1}^{N}(\beta_1 x_i + \beta 2 - y_i)^2$ and stopping condition $\|\nabla f(x)\| < 0.01$.

(2) Write code for stochastic gradient for the above problem with 1 random points in every iterations.

(3) Write code for mini batch gradient method using 10 random points.

(4) Consider the 2 column data set. Write code for best fitting quadratic polynomial using gradient descent method. Choose stopping condition $\|\nabla f(x)\| < 0.01$.

(5) Write code for stochastic gradient for the above problem with 1 random points in every iterations.

(6) Write code for mini batch gradient method using 10 random points.

(7) Using diabetes data set write code for logistic regression using (i) stochastic gradient (ii) mini batch gradient with 10 random sets.