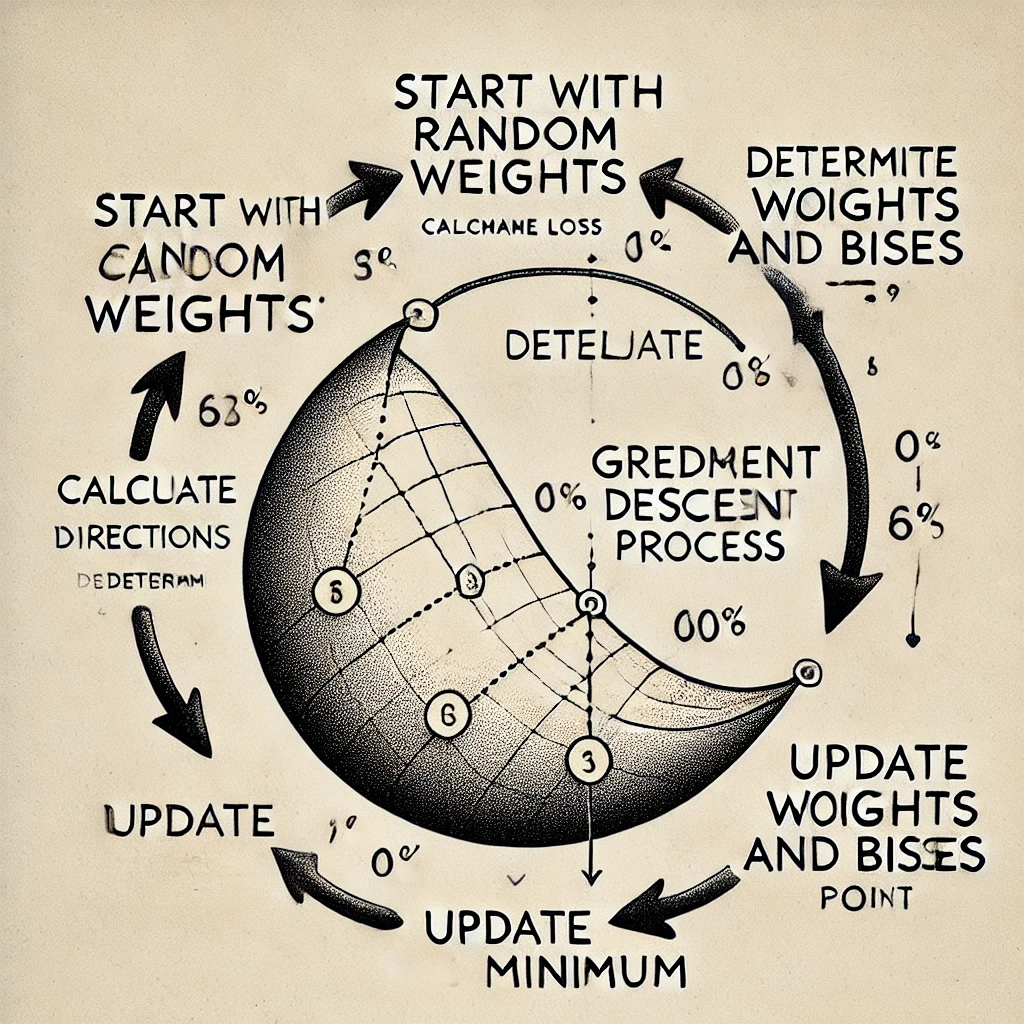
Hi everyone. In Previous posts we have seen [hashtag#linear\_regression](https://www.linkedin.com/search/results/all/?keywords=%23linear_regression&origin=HASH_TAG_FROM_FEED) [hashtag#L1\_loss](https://www.linkedin.com/search/results/all/?keywords=%23l1_loss&origin=HASH_TAG_FROM_FEED) [hashtag#l2\_Loss](https://www.linkedin.com/search/results/all/?keywords=%23l2_loss&origin=HASH_TAG_FROM_FEED) [hashtag#MSE](https://www.linkedin.com/search/results/all/?keywords=%23mse&origin=HASH_TAG_FROM_FEED) [hashtag#MAE](https://www.linkedin.com/search/results/all/?keywords=%23mae&origin=HASH_TAG_FROM_FEED). in todays post let us explore about [hashtag#Gradient\_Descent](https://www.linkedin.com/search/results/all/?keywords=%23gradient_descent&origin=HASH_TAG_FROM_FEED)  
  
Gradient Descent: It is a mathematical technique that [hashtag#iteratives](https://www.linkedin.com/search/results/all/?keywords=%23iteratives&origin=HASH_TAG_FROM_FEED) finds the weights and bias that produce the model with the lowest loss. Gradient descent finds the bests weights and bias by repeating the following process for a number of user defined iterations.  
  
The models begin training with randomized weights and biases near zero, and then repeats the following step:  
  
1️⃣ calculate the loss with the current weights and biases.  
2️⃣ Determine the direction to move the weights and boas that reduce loss.  
3️⃣ Move the weights and bias values a small amount in the direction that reduces loss.  
4️⃣ Return to step one and repeat the process until the model cant reduce the loss any further.  
  
  
  
A linear model converges when its founds the [hashtag#minimum\_loss](https://www.linkedin.com/search/results/all/?keywords=%23minimum_loss&origin=HASH_TAG_FROM_FEED). Therefore, additional iterations only cause [hashtag#gradient](https://www.linkedin.com/search/results/all/?keywords=%23gradient&origin=HASH_TAG_FROM_FEED) descent to move the [hashtag#weights](https://www.linkedin.com/search/results/all/?keywords=%23weights&origin=HASH_TAG_FROM_FEED) and [hashtag#bias](https://www.linkedin.com/search/results/all/?keywords=%23bias&origin=HASH_TAG_FROM_FEED) values in very small amounts around the [hashtag#minimum](https://www.linkedin.com/search/results/all/?keywords=%23minimum&origin=HASH_TAG_FROM_FEED).  
  
[hashtag#Convergence](https://www.linkedin.com/search/results/all/?keywords=%23convergence&origin=HASH_TAG_FROM_FEED): it is a state that reached when loss values change very little or nor at all with each iteration.  
  
Convex Function: A function in which the region above the graph of the function is a convex set. Prototypical convex function is shaped something like the letter u.  
  
A strictly convex function has exactly one local minimum point, which is also the global minimum point.  
  
convex set: A subset of Euclidean space such that a line drawn between any two points in the subset remains completely within the subset.  
  
This is the essence of how gradient descent works and the concepts of convergence and convexity that are critical to model optimization.   
  
[hashtag#AI](https://www.linkedin.com/search/results/all/?keywords=%23ai&origin=HASH_TAG_FROM_FEED) [hashtag#MachineLearning](https://www.linkedin.com/search/results/all/?keywords=%23machinelearning&origin=HASH_TAG_FROM_FEED) [hashtag#GradientDescent](https://www.linkedin.com/search/results/all/?keywords=%23gradientdescent&origin=HASH_TAG_FROM_FEED) [hashtag#Optimization](https://www.linkedin.com/search/results/all/?keywords=%23optimization&origin=HASH_TAG_FROM_FEED) [hashtag#day6](https://www.linkedin.com/search/results/all/?keywords=%23day6&origin=HASH_TAG_FROM_FEED) [hashtag#Convex\_set](https://www.linkedin.com/search/results/all/?keywords=%23convex_set&origin=HASH_TAG_FROM_FEED) [hashtag#convergence](https://www.linkedin.com/search/results/all/?keywords=%23convergence&origin=HASH_TAG_FROM_FEED) [hashtag#convex\_funcrion](https://www.linkedin.com/search/results/all/?keywords=%23convex_funcrion&origin=HASH_TAG_FROM_FEED)

A diagram of a curve

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