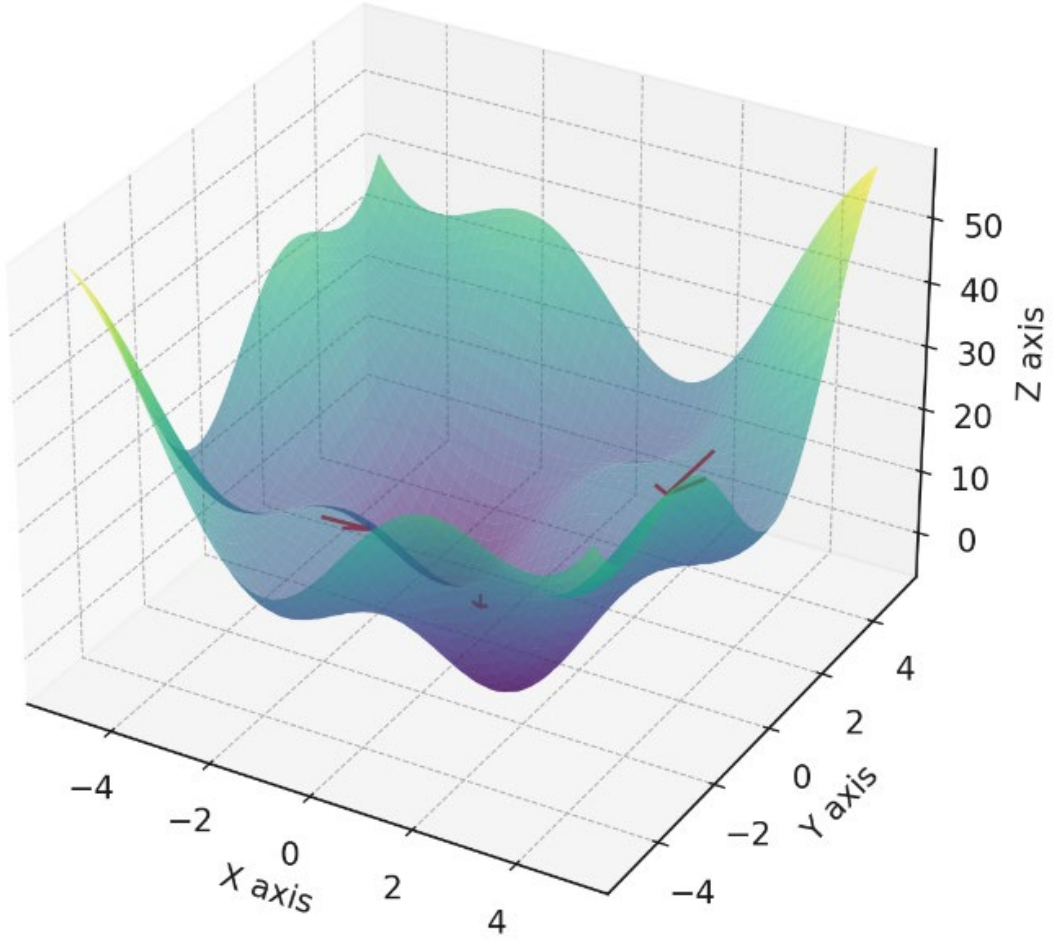
Optimization Algorithms

Module 3 Objectives

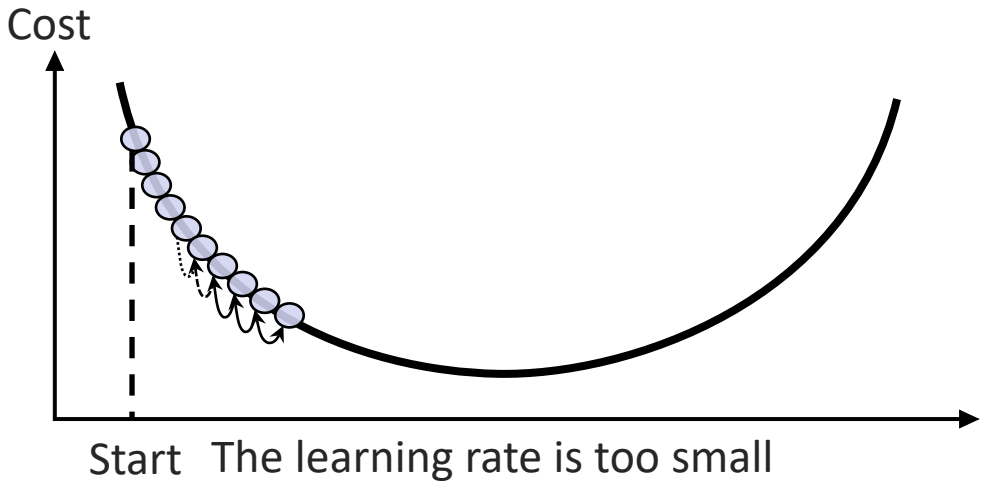
1. Describe the purpose and process of gradient descent.
2. Discuss the error loss function.
3. Describe optimizers.
4. Adjust a model's hyperparameters to guide its performance.

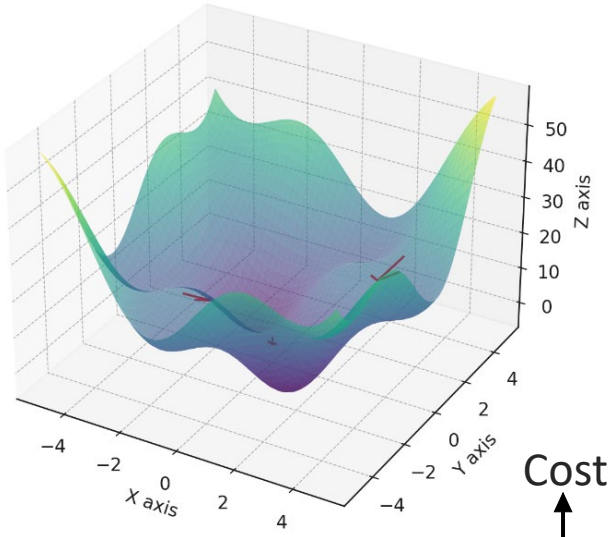
Understanding Gradient Descent

It’s All Downhill From Here

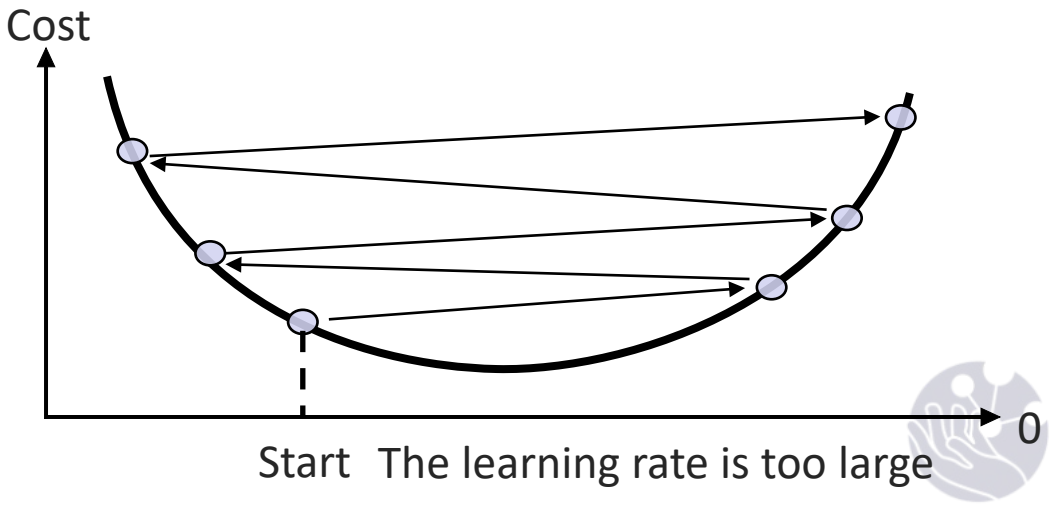


This image was generated using AI tools





This image was generated using AI tools

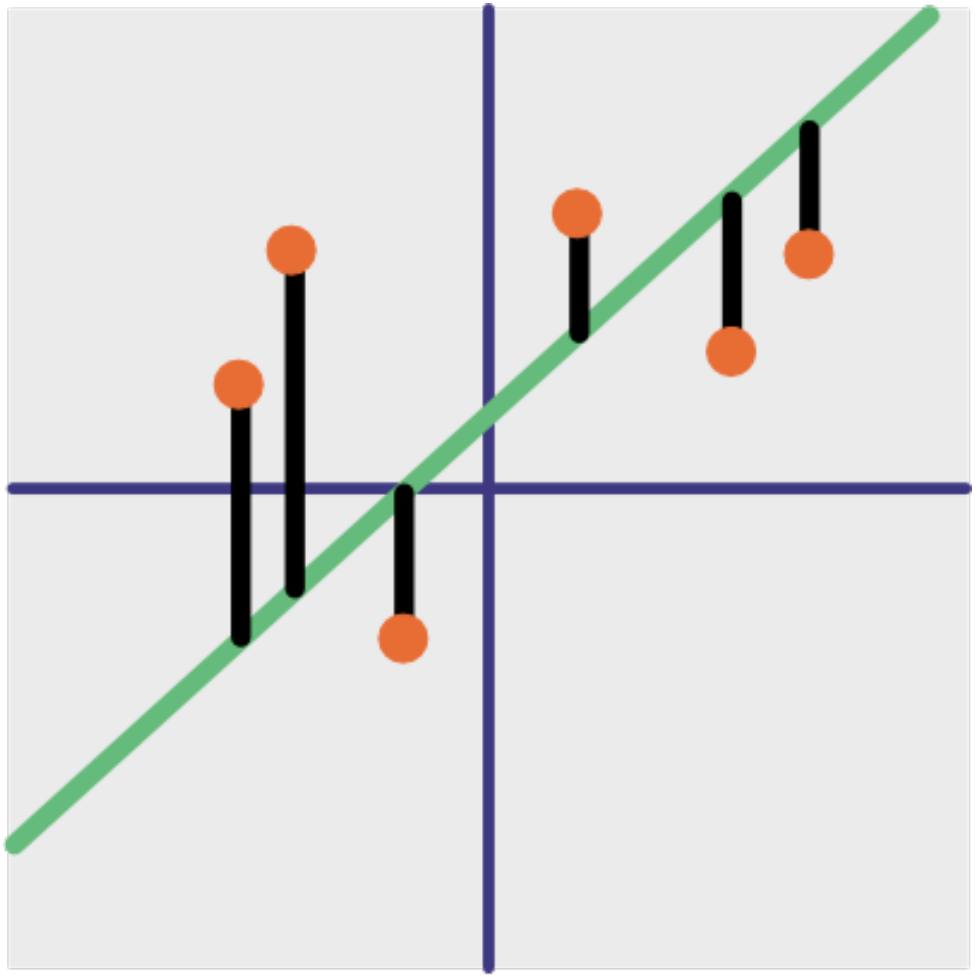


Introduction to Error and Loss Functions

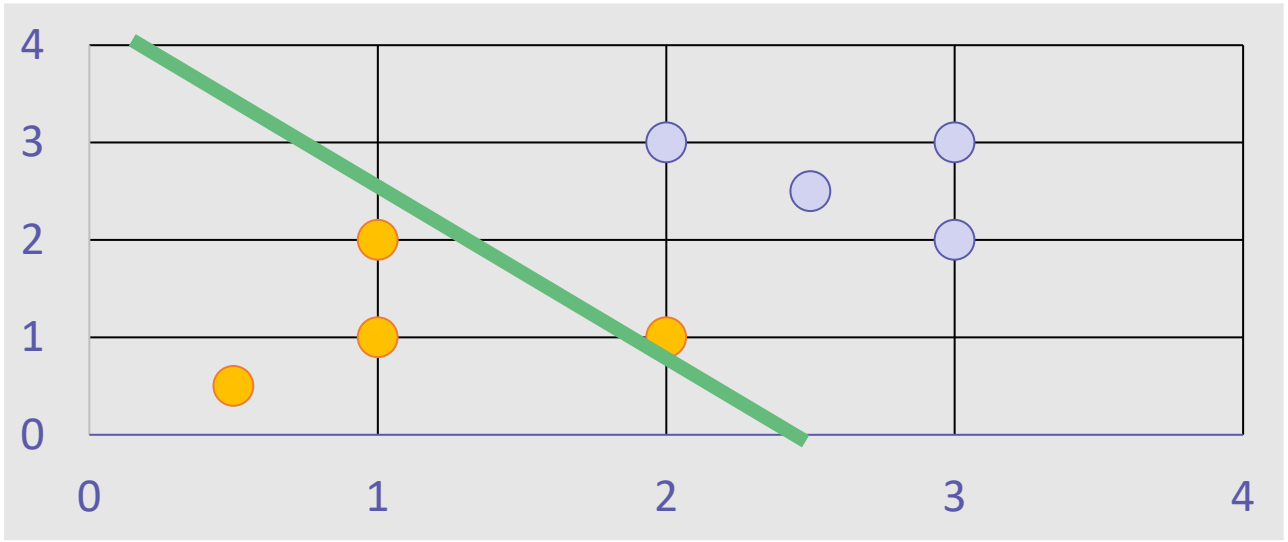
Loss Functions

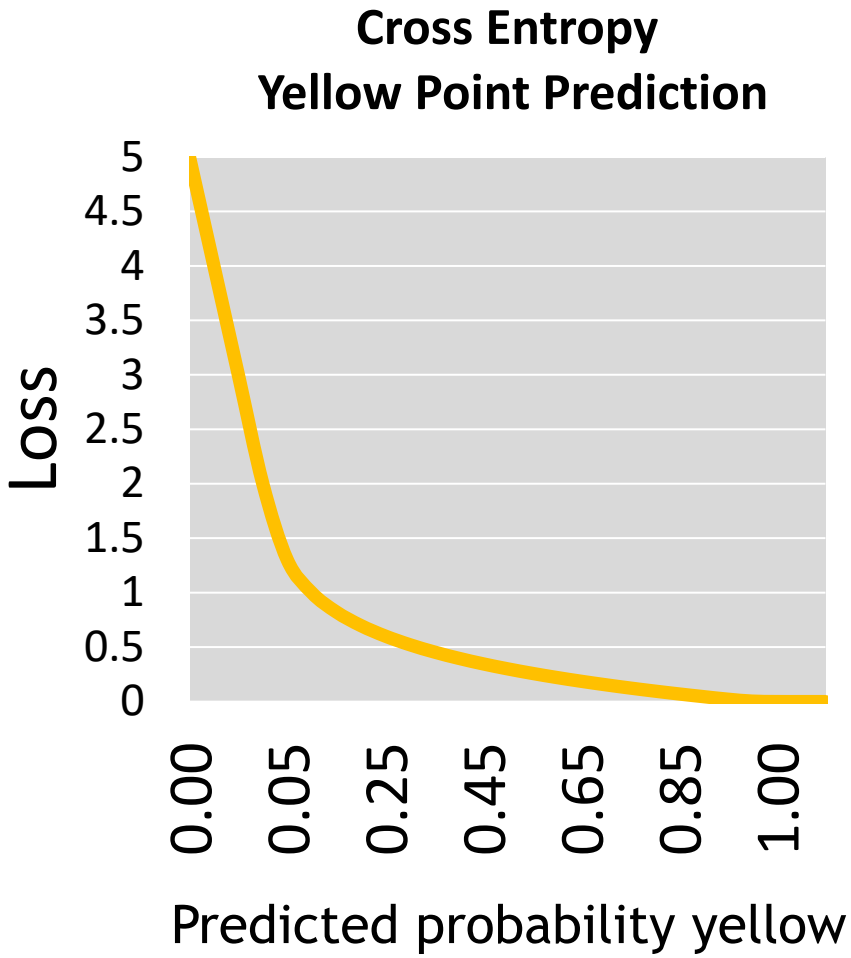
- How do we quantify prediction error?

Mean Squared Error (MSE)

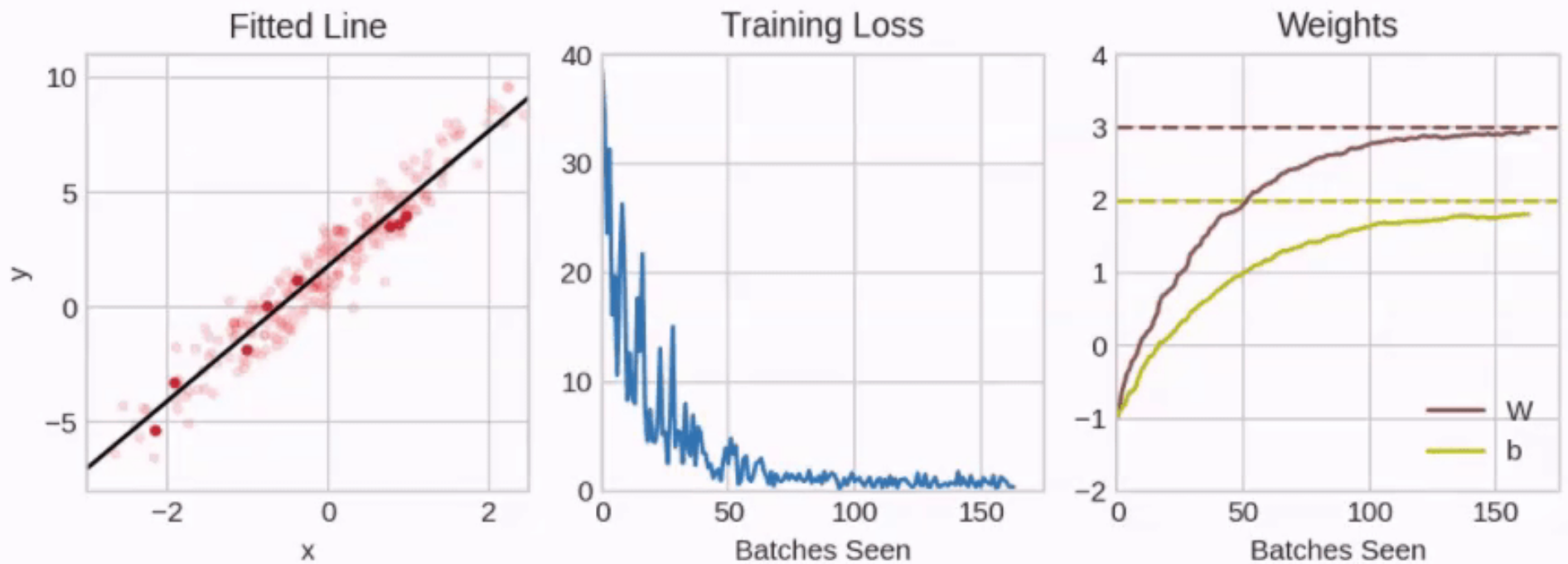


Cross Entropy

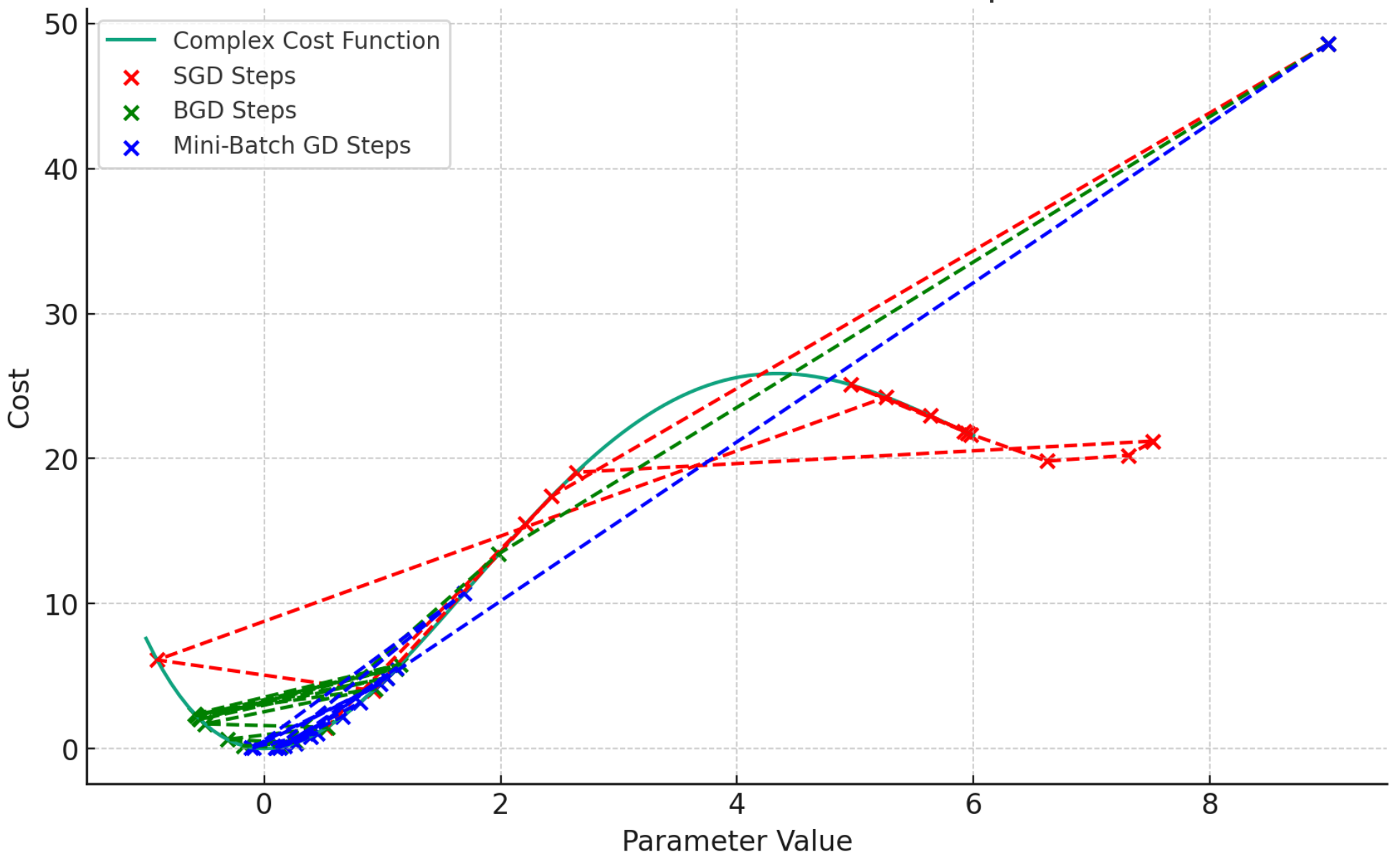




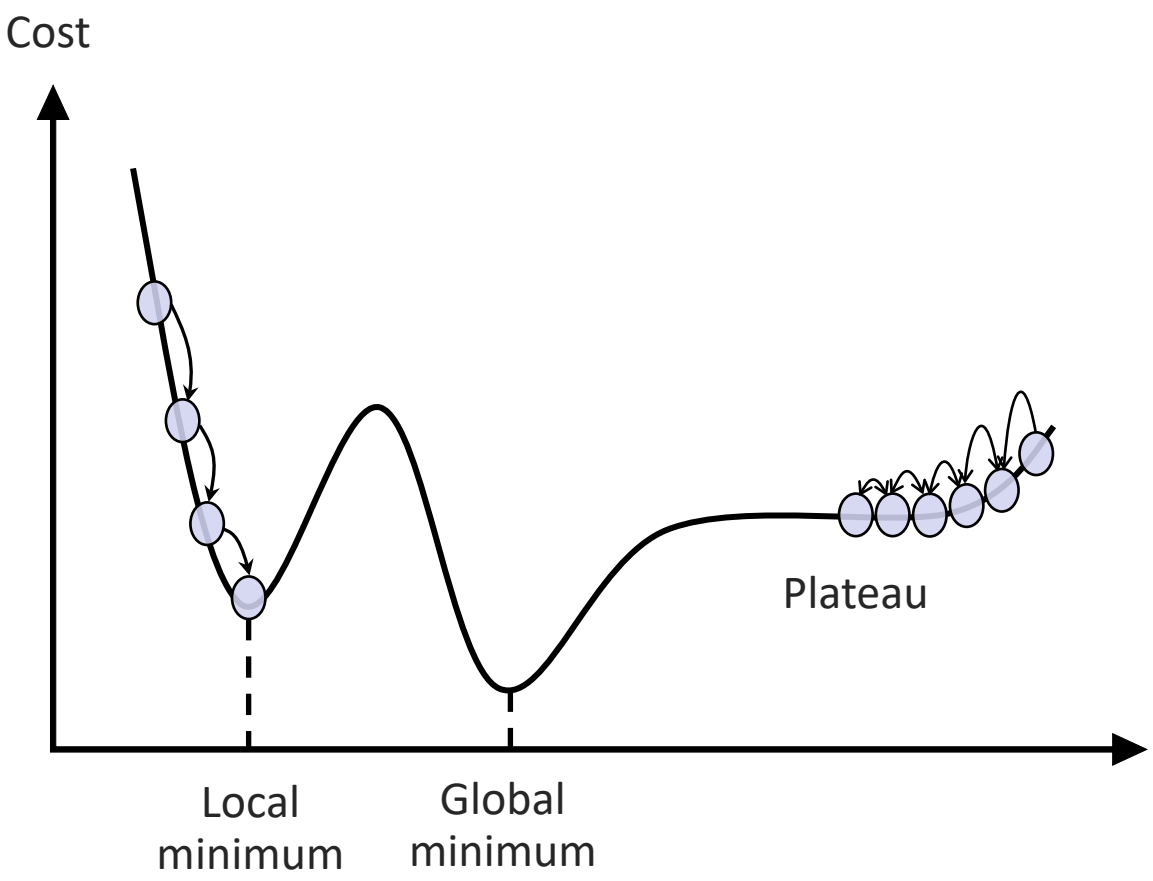
Optimizers and Advanced Gradient Descent Techniques

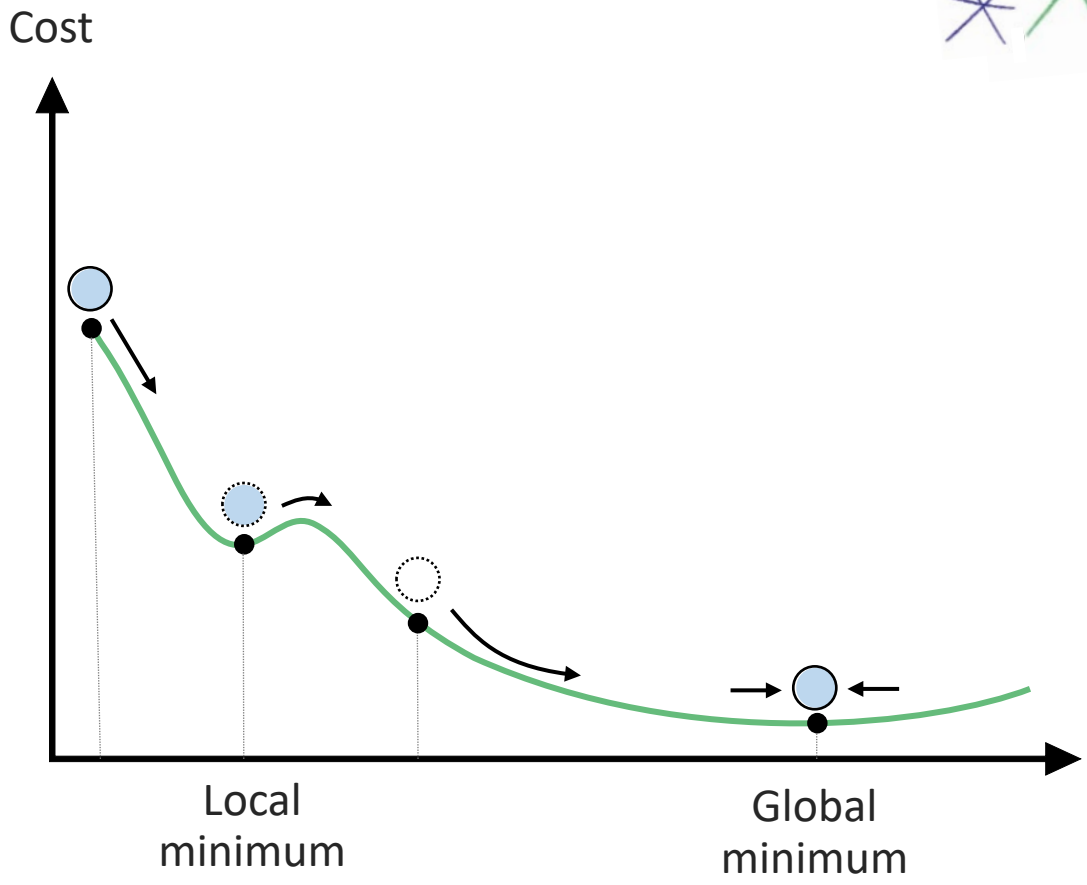


Training a neural network with Stochastic Gradient Descent.

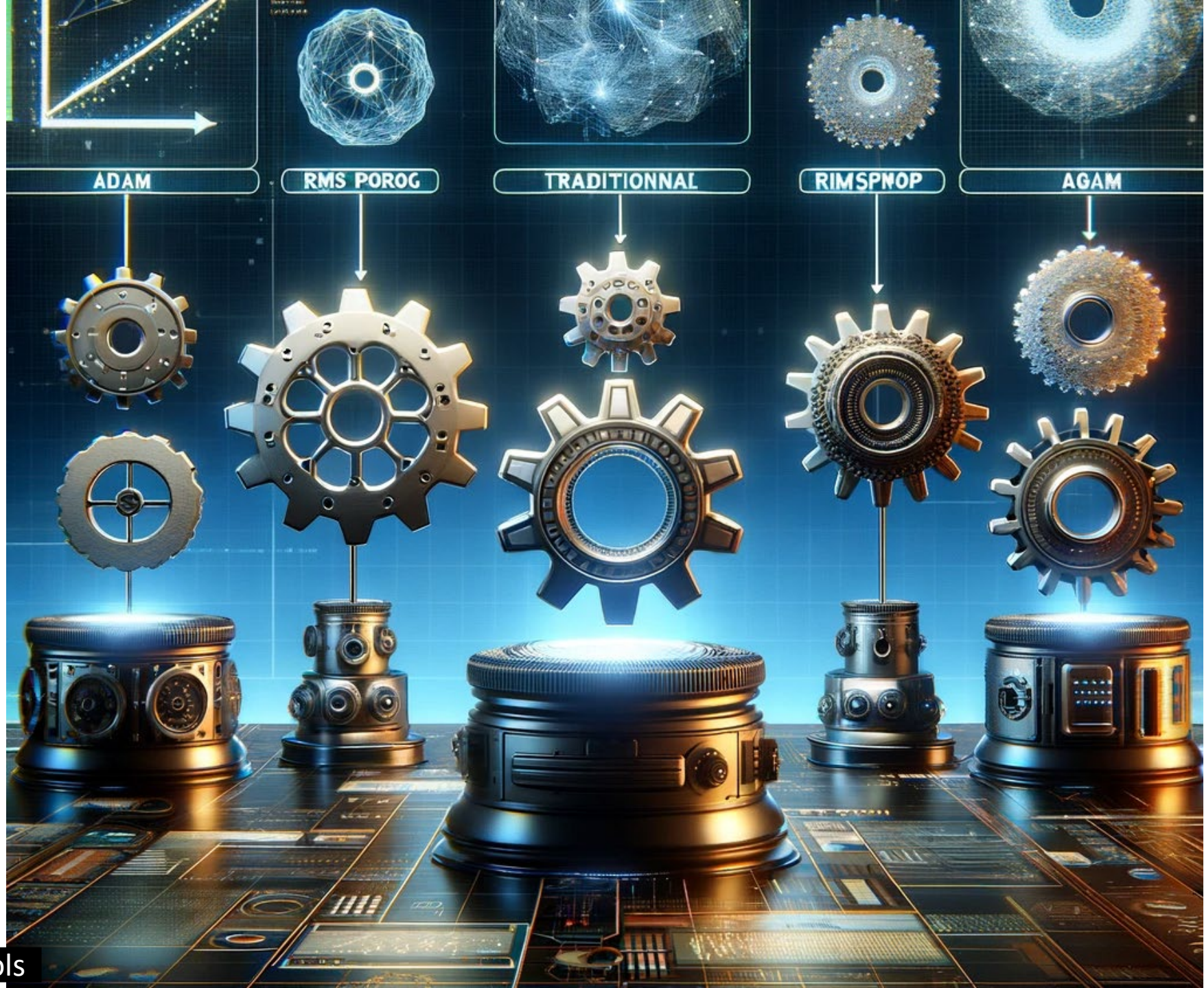


This image was generated using AI tools


Cost
Plateau
Local
minimum
Global
minimum


Cost
Local
minimum
Global
minimum

Choosing the Right Optimizer: A Quick Guide



This Image Was Generated Using AI Tools

Hyperparameter Optimization

04_bees_vs_wasps.ipynb

This notebook will walk you through building and training your own image classification model, then allow you to compare different hyperparameter optimization configurations!

Questions?

(QR CODE FOR SURVEY!)