



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.

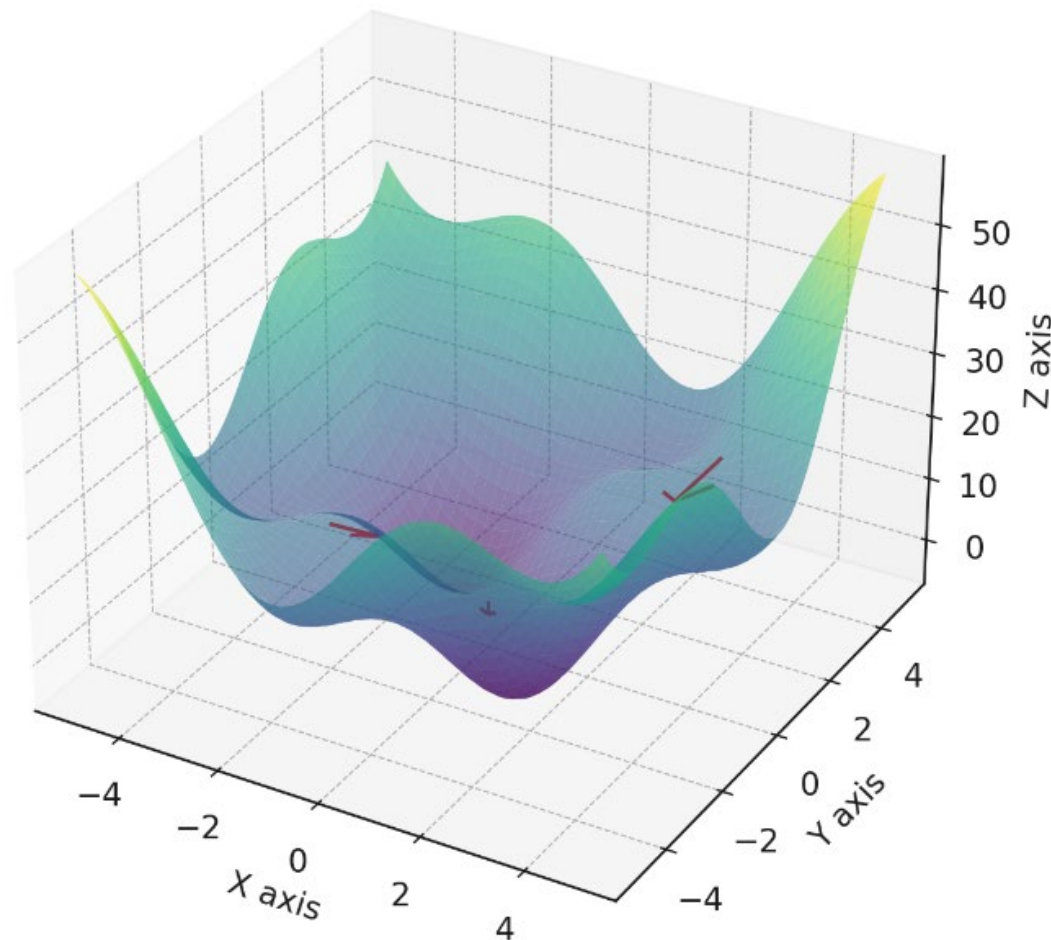




Understanding Gradient Descent

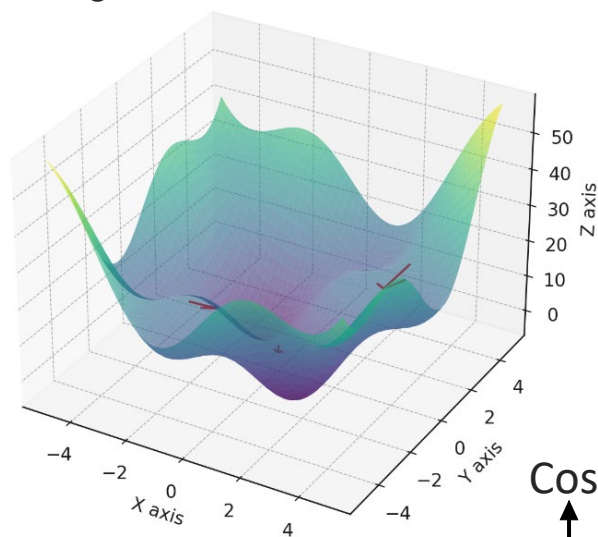
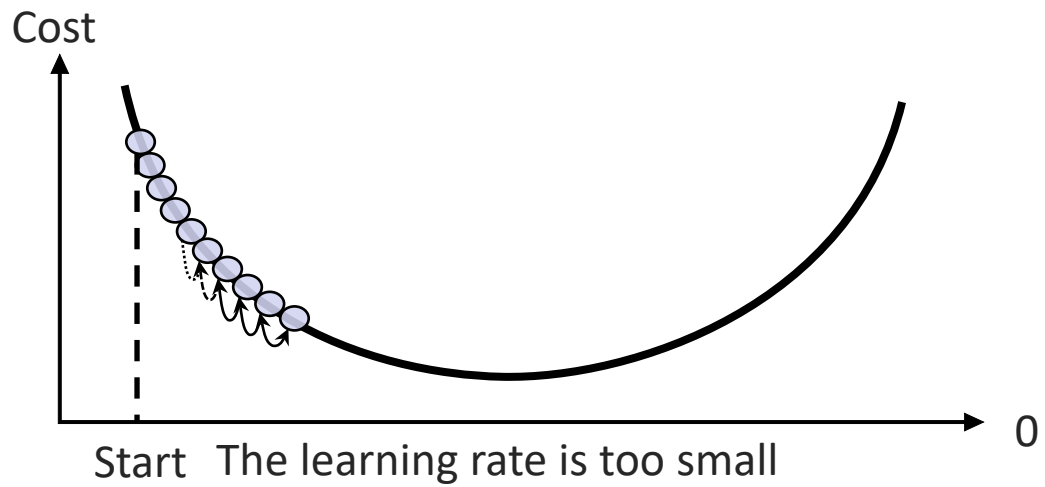


It's All Downhill From Here

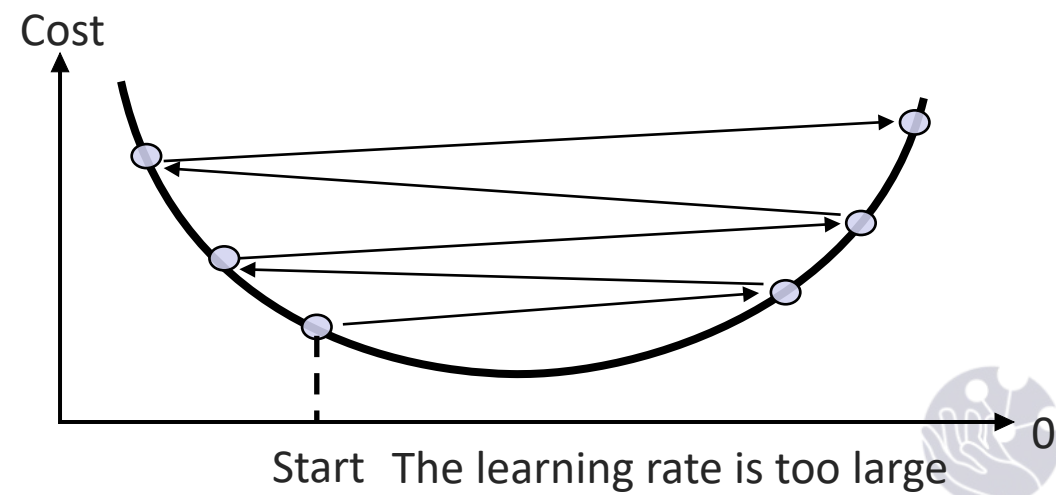


This image was generated using AI tools





This image was generated using AI tools





Introduction to Error and Loss Functions

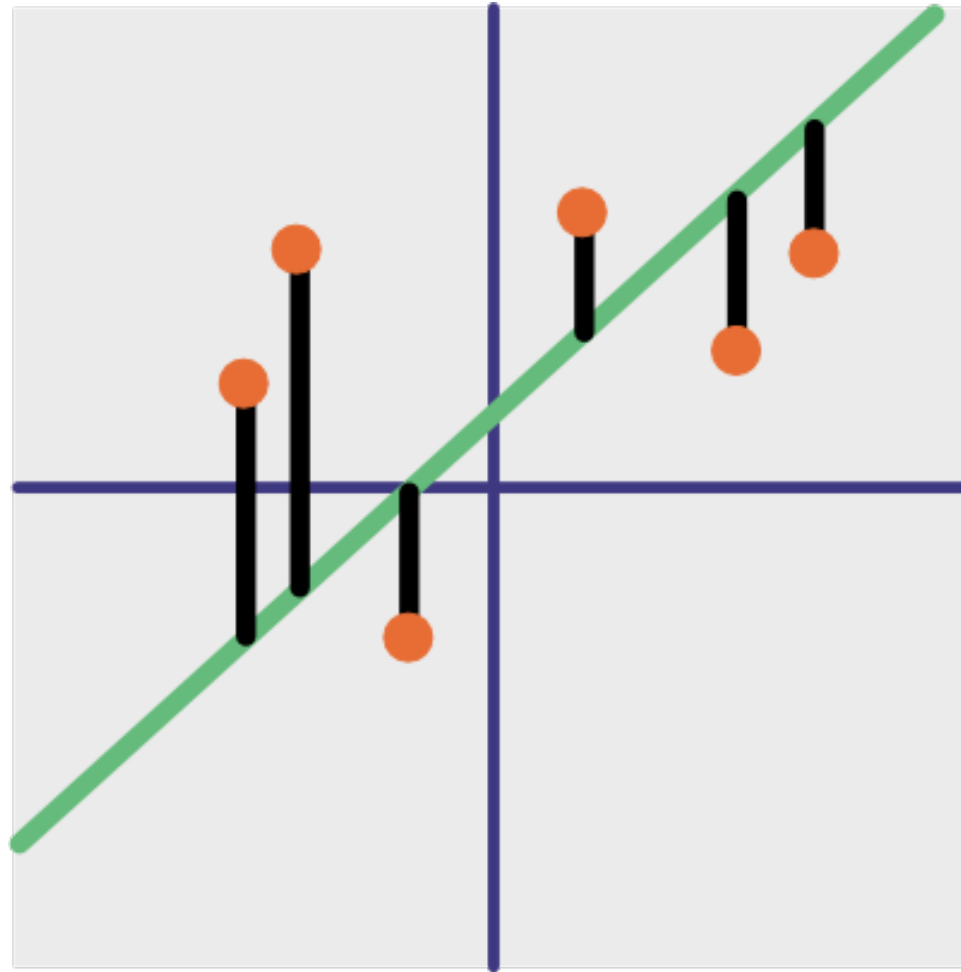


Loss Functions

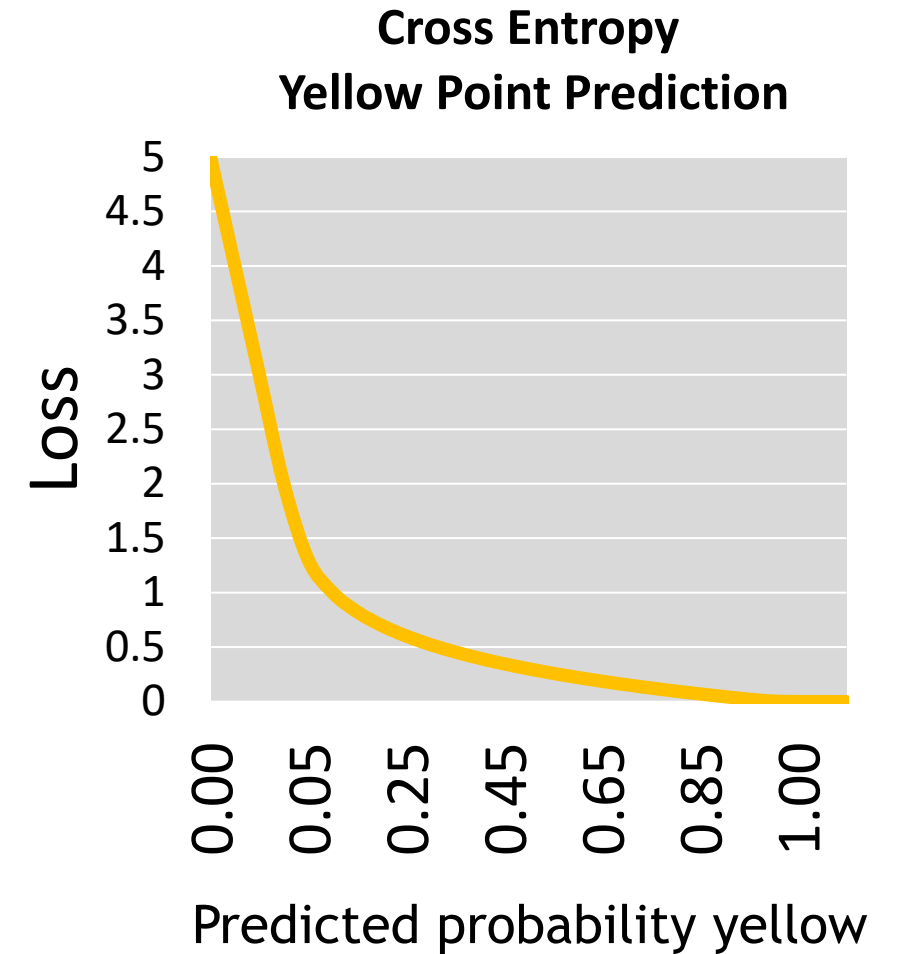
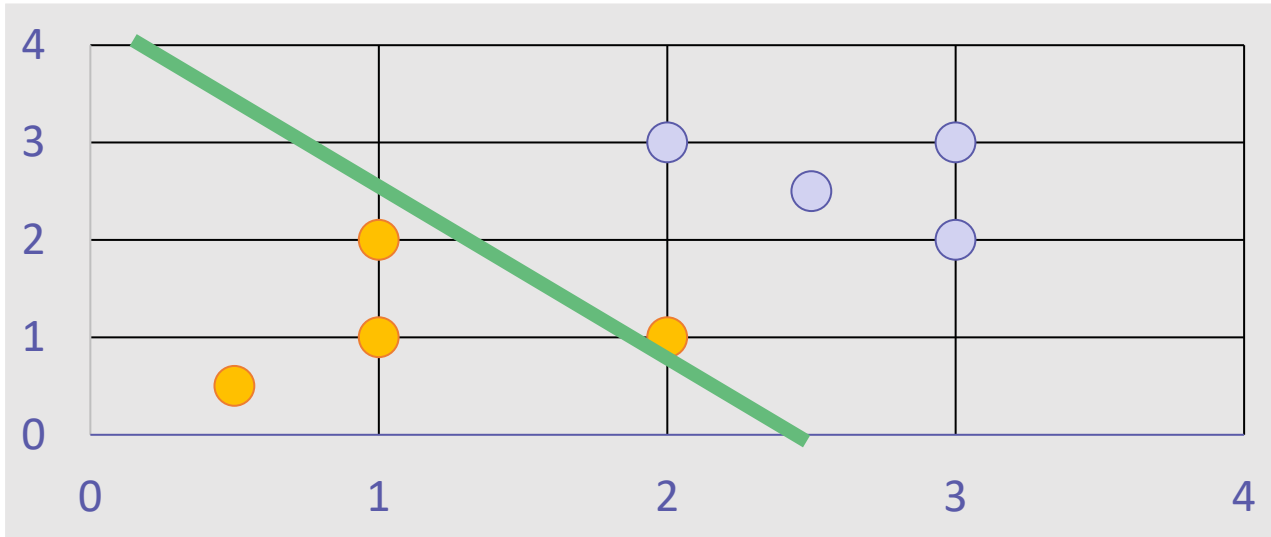
- How do we quantify prediction error?








Mean Squared Error (MSE)



Cross Entropy



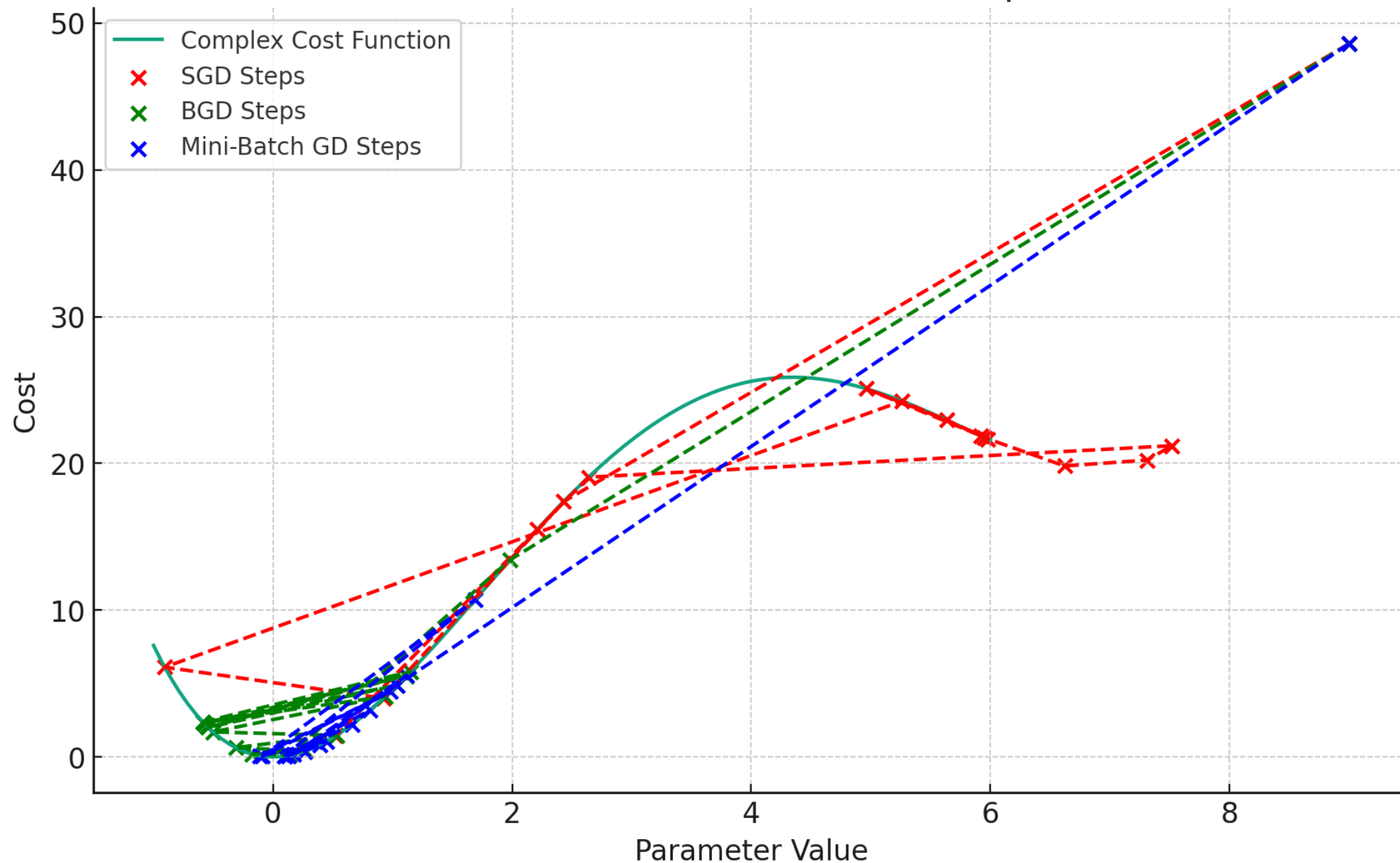


Optimizers and Advanced Gradient Descent Techniques

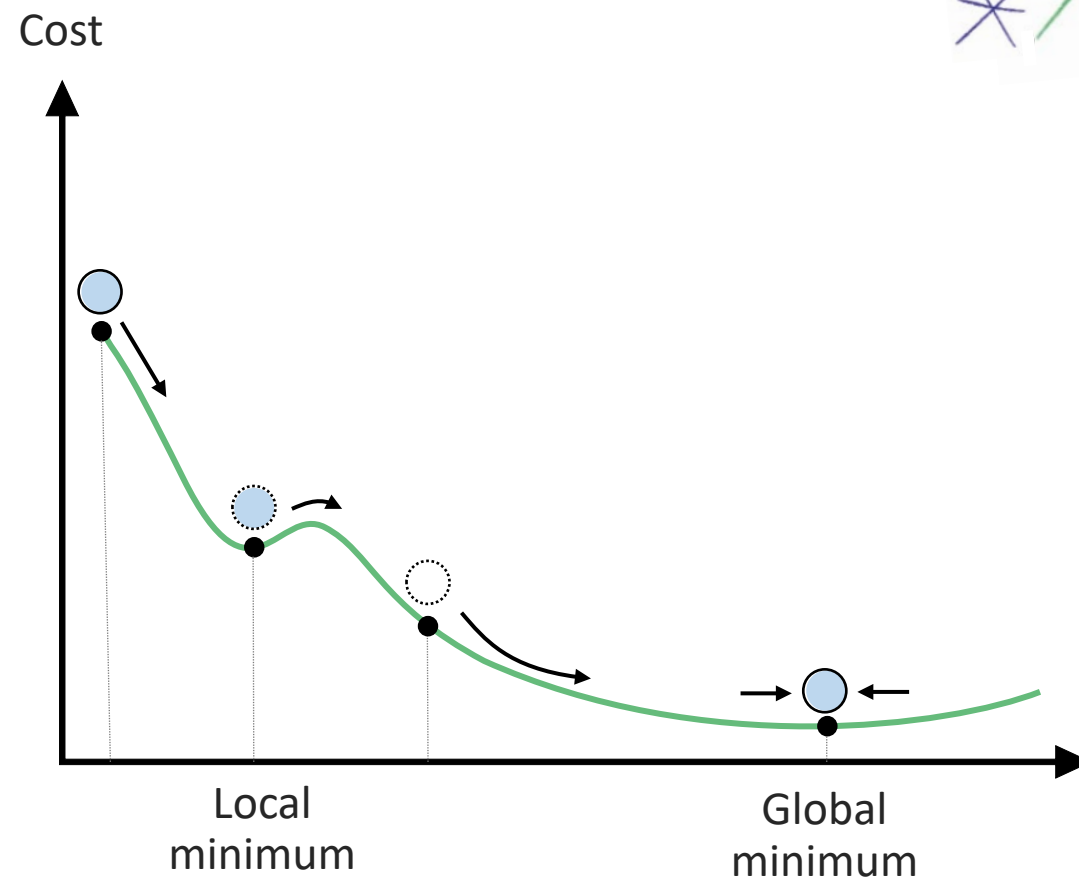
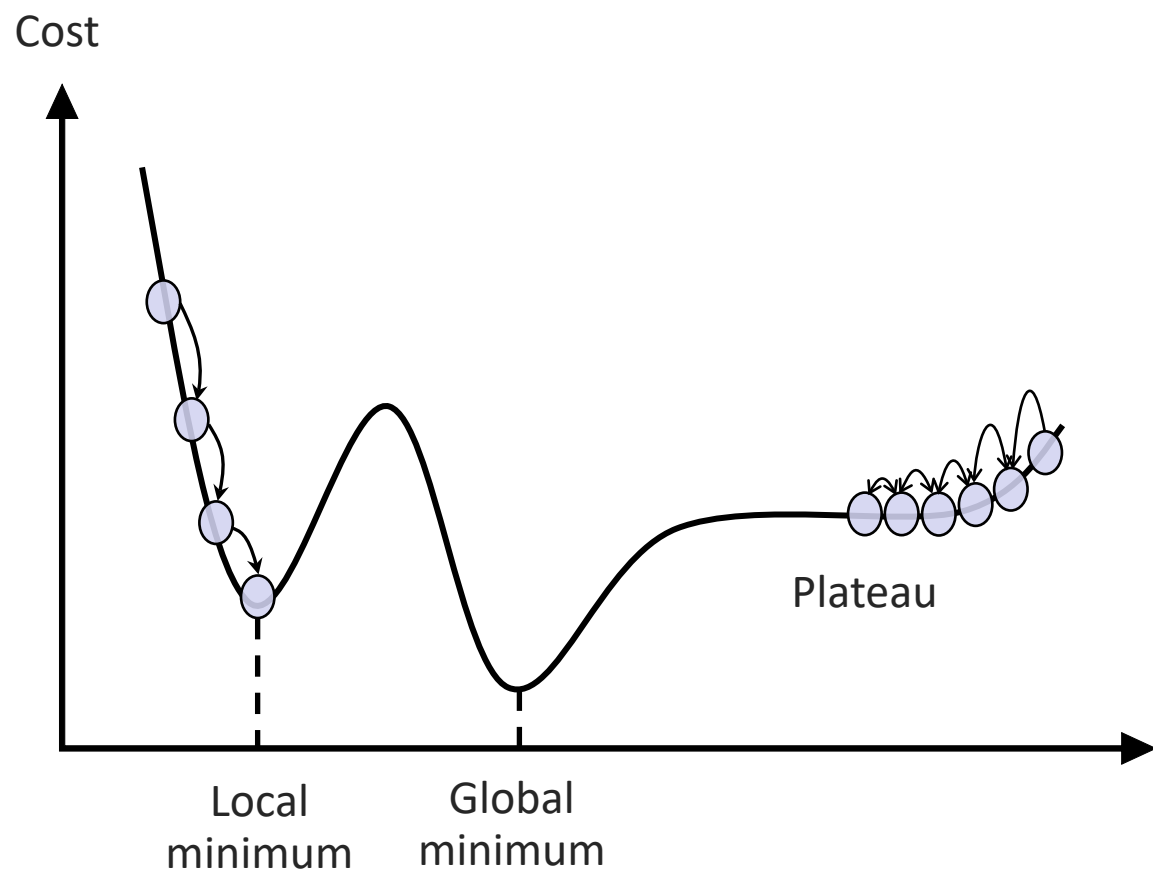


Training a neural network with Stochastic Gradient Descent.

SGD, Batch GD, and Mini-Batch GD on a Complex Cost Function



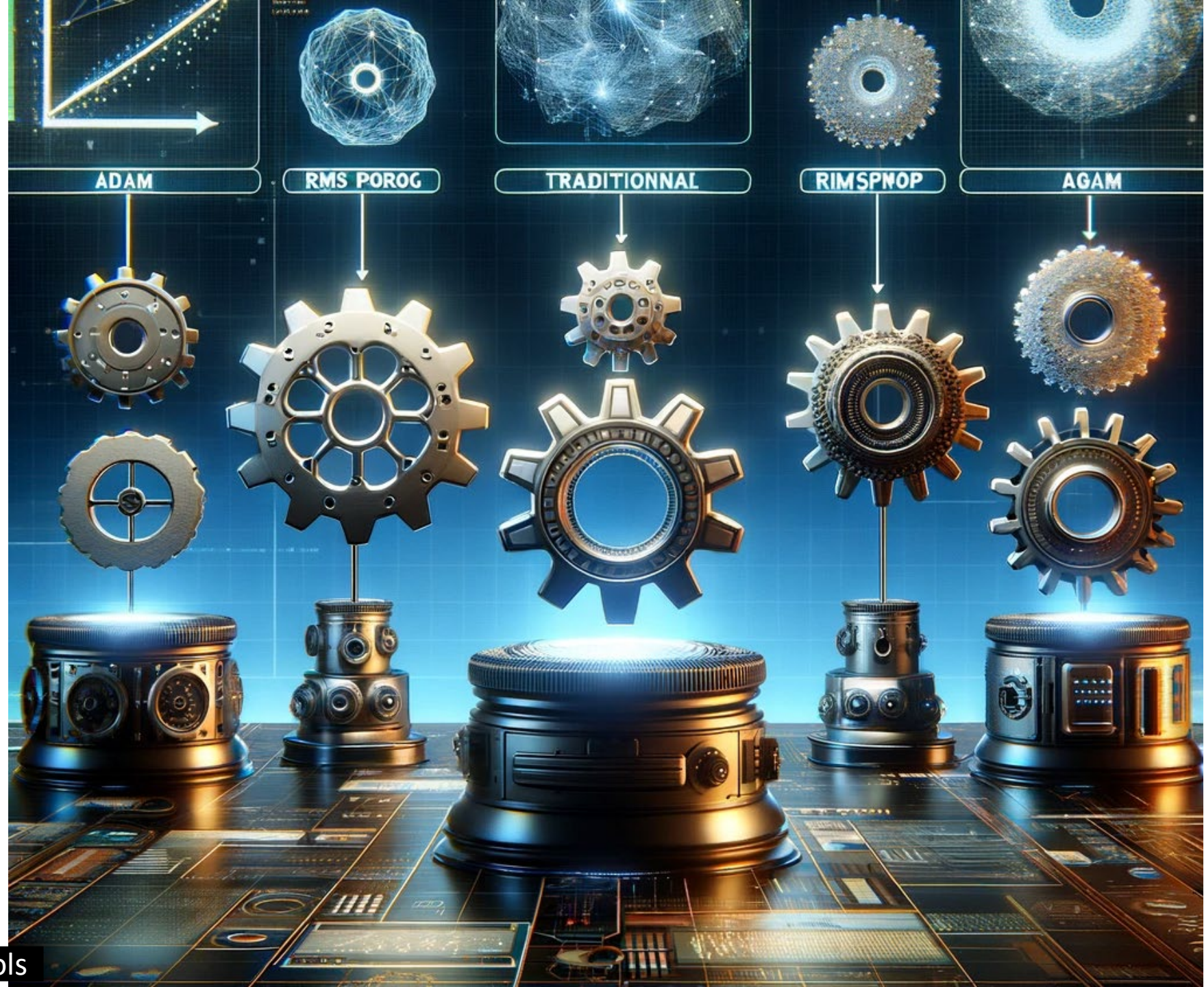
This image was generated using AI tools



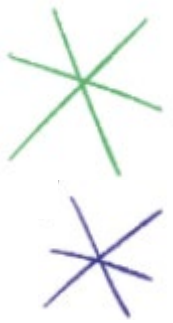


Choosing the Right Optimizer: A Quick Guide





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!)

