CODE BASICS

DEEP LEARNING TAKEAWAYS

codebasics.io

Chapter:

Neural Networks in PyTorch

Employee Bonus Prediction

1. nn.Module is a base class for all neural network modules
2. A usual practice is to create a subclass out of nn.Module to define your own neural network architecture
3. Calling model(train_data) will internally call forward method on your subclass

Datasets and DataLoaders

1. PyTorch provides a number of pre-loaded datasets that covers image, text and audio
2. DataLoader on the other hand lets you create batches from the big dataset easily for your training purpose. It also allows to reshuffle the data at every epoch to reduce model overfitting

Cost Function: Binary Cross Entropy

1. Cost functions like MSE may not work well for binary classification problems as the cost surface will not be convex and you may get stuck in local minima
2. Binary cross entropy (BCE) along with sigmoid activation gives a smooth, convex surace for cost function which makes convergence easier
3. BCE also penalizes high confidence errors which eventually helps in efficient discovery of global minimum
4. BCE aligns perfectly with probabilistic outputs, providing a natural fit for binary outcomes

Cost Function: Categorical Cross Entropy

1. Categorical cross entropy (a.k.a just cross entropy) is used for multi-class classification problems.
2. Binary cross entropy is a special case categorical cross entropy when output classes are binary