Module 5 Glossary: Advanced Keras Techniques and Course Project

Welcome! This alphabetized glossary contains many terms used in this course. Understanding these terms is essential when working in the industry, participating in user groups, and participating in other certificate programs.

Term	Definition
Batch normalization	A technique that normalizes the inputs of each layer to improve the training stability and speed.
Callback functions	A powerful tool to customize and extend the behavior of your model training process.
Custom dense layer	A standard fully connected neural network layer.
Custom training loops	Custom training loops are user-defined procedures in machine learning that give developers more control over the training process. They allow the developer to tailor the training process to specific needs.
Epoch	Refers to one complete pass through the entire training dataset.
fit method	A high-level function commonly used in Keras to train a model.
GradientTape	A feature in TensorFlow that provides an easy way to record operations for automatic differentiation.
hp.Float function	A function used for floating-point hyperparameters.
hp.Int function	Function used for integer hyperparameters
Hyperparameter tuning	A crucial step in the machine learning pipeline that helps optimize model performance by finding the best set of hyperparameters.
Hyperparameters	Variables that govern the training process of a model.
Keras Tuner	A library that helps automate the process of hyperparameter tuning. It provides several search algorithms, including Random Search, Hyperband, and Bayesian Optimization.
Lambda layer	Used for creating custom operations that are simple enough to be defined using a lambda function or a small custom function.
Loss function	Measures how well the predictions made by the model match the true labels.
Mixed precision training	An optimization tool that leverages both 16-bit and 32-bit floating-point types to accelerate model training and reduce memory usage.
MNIST database	A large database of handwritten digits that is commonly used for training various image processing systems.
Model optimization	Refers to a set of techniques and processes that aim to improve the performance and efficiency of your neural networks.
Model pruning	An optimization tool involves removing less important weights from the model, reducing the model size, and improving inference speed.
Optimizer	Updates the weights of the model to minimize the loss.
prune_low_magnitude	A function that prunes the weights based on their magnitude.
Quantization	A technique that converts model weights and activations from floating-point to lower bit-width representations, such as 8-bit integers.
ReLU	An activation function that outputs the input directly if positive; otherwise, it outputs zero. Commonly used in hidden layers.
TensorFlow Model Optimization Toolkit	Provides easy-to-use APIs for pruning during training.
Xavier (Glorot) and He initialization methods	Methods that set the initial weights in a way that avoids issues like vanishing or exploding gradients.