Glossary: Advanced CNNs in Keras

Welcome! This alphabetized glossary contains many of the terms you'll find within this course. This comprehensive glossary also includes additional industry-recognized terms not used in course videos. These terms are important for you to recognize when working in the industry, participating in user groups, and participating in other certificate programs.

Term	Definition
Activation function	A mathematical function used in neural networks to determine the output of a neuron.
Adam optimizer	An optimization algorithm that can be used instead of the classical stochastic gradient descent procedure to update network weights iteratively based on training data.
Augmentation	A process of increasing the diversity of training data by applying various transformations like rotation, scaling, and so on.
Binary cross-entropy	A loss function used for binary classification tasks, measuring the performance of a classification model whose output is a probability value between 0 and 1.
Convolution	A mathematical operation used in deep learning, especially in convolutional neural networks (CNNs), for filtering data.
Custom augmentation function	A user-defined function that applies specific transformations to images during data augmentation, providing full control over the augmentation process.
Data augmentation	Techniques used to increase the diversity of training data by applying random transformations such as rotation, translation, flipping, scaling, and adding noise.
Deconvolution	Also known as transpose convolution, this is a technique used to up-sample an image, often used in generative models.
Dense layer	A fully connected neural network layer, where each input node is connected to each output node, commonly used in the final stages of a network.
Feature map	A set of features generated by applying a convolution operation to an image or data input.
Feature-wise normalization	A technique to set the mean of the data set to 0 and normalize it to have a standard deviation of 1.
Fine-tuning	The process of unfreezing some of the top layers of a pre-trained model base and jointly training both the newly added layers and the base layers for a specific task.
Flatten layer	A layer that converts the output of a convolutional layer to a 1D array, allowing it to be passed to a fully connected layer.
Generative adversarial networks (GANs)	A class of machine learning frameworks where two neural networks compete with each other to create realistic data samples.
Height shift range	A data augmentation parameter that randomly shifts an image vertically, altering its position to improve model robustness to vertical translations.
TensorFlow Hub	A repository of reusable machine learning modules, which can be easily integrated into TensorFlow applications to accelerate development.
TensorFlow.js	A library for training and deploying machine learning models in JavaScript environments, such as web browsers and Node.js.
Horizontal flip	A data augmentation technique where the image is flipped horizontally, creating a mirror image to increase data diversity.
ImageDataGenerator	A Keras class used for generating batches of tensor image data with real-time data augmentation.
ImageNet	A large visual database designed for use in visual object recognition software research, often used as a data set for pre-training convolutional neural networks.
Image processing	The manipulation of an image to improve its quality or extract information from it.
Kernel	A small matrix used in convolution operations to detect features such as edges in images.
Latent vector	A vector representing compressed data in a lower-dimensional space, often used in generative models.
Pre-trained model	A model previously trained on a large data set, which can be used as a starting point for training on a new, related task.
Random noise	A type of custom augmentation that adds random noise to images, simulating different lighting conditions and sensor noise to make models more robust.
Rotation range	A data augmentation parameter that randomly rotates an image within a specified range of degrees, enhancing model robustness to rotations.
Sample-wise normalization	A technique to set the mean of each sample to 0 and normalize each sample to have a standard deviation of 1.
Semantic segmentation	A deep learning task that involves classifying each pixel in an image into a predefined class.
Shear range	A data augmentation parameter that applies a shear transformation to an image, slanting it along one axis to simulate different perspectives.
Stride	A parameter in convolution that determines the step size of the kernel when moving across the input data.
TensorFlow	An open-source machine learning library used for various tasks, including deep learning and image processing.
Transfer learning	A method where a pre-trained model is adapted to a new, related task by adjusting its weights, allowing it to perform well even with limited data for the new task.
Transpose convolution	An operation that reverses the effects of convolution, often used for up-sampling in image processing.
VGG16	A convolutional neural network model pre-trained on the ImageNet data set, commonly used in transfer learning for tasks involving image classification.
Width shift range	A data augmentation parameter that randomly shifts an image horizontally, altering its position to improve model robustness to horizontal translations.
Zoom range	A data augmentation parameter that randomly zooms in or out on an image, altering its scale during training.

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