

Appendix E1

Glossary of Common AI Terms

Sources:

http://wiki.fast.ai/index.php/Deep_Learning_Glossary

<https://developers.google.com/machine-learning/glossary/>

Accuracy

Accuracy, or Error Rate, describes the percentage of correct predictions made by the model. Accuracy = # correct/total predictions.

Activation function

A function (for example, ReLU) that takes in the weighted sum of all of the inputs from the previous layer and generates an output value the next layer.

Algorithm

A method, or series of instructions, devised to generate a machine learning model. Examples include linear regression, decision trees, support vector machines, and neural networks.

Artificial intelligence

A nonhuman program or model that can solve sophisticated tasks. For example, a program or model that translates text or a program or model that identifies diseases from radiologic images both exhibit artificial intelligence.

Attribute

A quality describing an observation (eg, color, size, weight).

Backpropagation

The primary algorithm for performing gradient descent on neural networks. First, the output values of each node are calculated (and cached) in a forward pass. Then, the partial derivative of the error with respect to each parameter is calculated in a backward pass through the graph.

Bias term

An intercept or offset from an origin used by a machine learning. A bias term permits the output of the activation function to be shifted.

Classifier

A mapping from unlabeled instances to discrete categories (eg, Dog or Cat?, Blue, Red, Green?) Some also provide probability estimates or scores.

Convolutional Neural Network

Type of deep learning models where at least one activation layer uses a convolutional filter of its input.

Deep learning

A type of neural network containing multiple hidden layers

Feature

An input variable used in making predictions.

Machine learning

A program or system that builds (trains) a predictive model from input data. The system uses the learned model to make useful predictions from new (never-before-seen) data drawn from the same distribution as the one used to train the model. Machine learning also refers to the field of study concerned with these programs or systems. Formally, machine learning is a subfield of artificial intelligence.

Layer

A set of neurons in a neural network that process a set of input features, or the output of those neurons.

Model

A structure that stores a generalized, internal representation of a dataset for description or prediction. When training a machine learning algorithm on a dataset, the output is a model.

Multiclass classification

Classification problems that distinguish among more than two classes.

Neural network

A machine learning model composed of layers (at least one of which is hidden) consisting of simple connected units or neurons followed by nonlinearities.

Precision

In the context of binary classification (Yes/No), precision measures the model's performance at classifying positive observations (ie, "Yes")

Regression

A type of model that outputs continuous (typically, floating-point) values. Compare with classification models, which output discrete values, such as "day lily" or "tiger lily."

Rectified Linear Unit (ReLU)

A type of activation function where the output is equal to the input if the input is positive, and zero otherwise.