

Comparing Generative Classifiers vs Discriminative Classifiers

In terms of a probabilistic model, a generative model defines how data is created. A generative model predicts the joint probability distribution of data $P(X, Y)$ between observed data X and corresponding labels Y in the supervised learning scenario [1]. Another less commonly mentioned criterion of a generative model is that it provides a method for sampling X, Y pairings. The Naive Bayes model is an example of this.

Discriminative Classifiers learn which qualities in the input are most useful for differentiating across classes. As a result, when discriminative models are presented photos, they will learn that particular traits are associated with specific entities. A discriminative classifier is an example of logistic regression. It either directly calculates the posterior probability $P(y|x)$ or learns a direct map from input x to label y . As a result, these models aim to learn the decision boundary of the model. The logistic regression model is an example of this.

“reproducible research in machine learning”

Reproducibility is described as the capacity to replicate the experimental and computational techniques as precisely as feasible, using the same data and equipment, to produce the same findings as in the original study.[2]

Reproducibility occurs when the same techniques, algorithms, starting conditions, and so on are used. However, the algorithms, or experimental techniques, must be disclosed together with all relevant experiment information.

Reproducibility can be implemented and improved by means for record keeping, performing version control procedures, implementing workflow management, and usage of tools that aid in reproducibility. These methods can also be improved by performing regular audits as well as other record-tracking methodologies.[1]

[1] Ding, Z. (2020, August 24). 5 - reproducibility. Machine Learning Blog | ML@CMU | Carnegie Mellon University. Retrieved October 4, 2022, from <https://blog.ml.cmu.edu/2020/08/31/5-reproducibility/#:~:text=Definition,an%20original%20work%20%5B10%5D>.

[2] U.S. National Library of Medicine. (n.d.). *Home - books - NCBI*. National Center for Biotechnology Information. Retrieved October 4, 2022, from <https://www.ncbi.nlm.nih.gov/books>