**Gradient boosting**

**Gradient boosting** is a [machine learning](https://en.wikipedia.org/wiki/Machine_learning) technique used in [regression](https://en.wikipedia.org/wiki/Regression_(machine_learning)) and [classification](https://en.wikipedia.org/wiki/Classification_(machine_learning)) tasks, among others. It gives a prediction model in the form of an [ensemble](https://en.wikipedia.org/wiki/Ensemble_learning) of weak prediction models, which are typically [decision trees](https://en.wikipedia.org/wiki/Decision_tree_learning).[[1]](https://en.wikipedia.org/wiki/Gradient_boosting#cite_note-:1-1)[[2]](https://en.wikipedia.org/wiki/Gradient_boosting#cite_note-hastie-2) When a decision tree is the weak learner, the resulting algorithm is called gradient-boosted trees; it usually outperforms [random forest](https://en.wikipedia.org/wiki/Random_forest).A gradient-boosted trees model is built in a stage-wise fashion as in other [boosting](https://en.wikipedia.org/wiki/Boosting_(machine_learning)) methods, but it generalizes the other methods by allowing optimization of an arbitrary [differentiable](https://en.wikipedia.org/wiki/Differentiable_function) [loss function](https://en.wikipedia.org/wiki/Loss_function).