In machine learning, when we talk about “parameters,” we’re referring to the internal settings or weights that the model learns from the training data. These are the things that the model adjusts in order to make accurate predictions or classifications.

On the other hand, “hyperparameters” are like the settings on a machine learning model that you choose before you start training. They guide the learning process, but the model doesn’t learn them from the data.

For example, think of hyperparameters as the settings you choose before you start cooking a dish. You decide things like the cooking temperature, cooking time, and ingredients. These choices influence how the dish turns out, but they’re not things that change while the dish is cooking.

In machine learning, hyperparameters can include things like:

1. Learning Rate: This is a hyperparameter used in optimization algorithms (like gradient descent) that determines how big of a step the model takes when adjusting its parameters during training.

2. Number of Hidden Layers or Nodes: In neural networks, you might decide how many layers and nodes each layer has. This affects the complexity and capacity of the model.

3. Depth of a Decision Tree: In decision tree models, you might decide how deep the tree can grow, which affects how detailed and specific the model’s decisions can be.

4. Regularization Strength: This is a hyperparameter used to prevent overfitting, which is when a model fits the training data too closely and doesn’t generalize well to new data.

These hyperparameters can have a big impact on how well a machine learning model performs.

So, choosing the right hyperparameters is an important part of building an effective model. It often involves a bit of trial and error, along with some understanding of the problem and the specific algorithm you're using.

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