"Overfitting and underfitting in practice: common scenarios and solutions"

Overfitting and underfitting are two common problems that can occur when training a machine learning model. **Overfitting occurs** when a model is too complex and learns the specific details of the training data too well, resulting in poor generalization to new data. This means that the model performs well on the training data, but poorly on test data or in real-world situations.

On the other hand, **underfitting occurs** when a model is too simple and is unable to capture the underlying patterns in the data. This results in a model that performs poorly on both the training and test data.

A real-world example of overfitting can be seen in a model that is trained to recognize faces in images. If the model is trained on a dataset that includes only a specific type of face (e.g. faces with a certain skin tone, facial structure, or age), it may perform well on that dataset, but poorly on a dataset that includes a more diverse set of faces. This is because the model has learned the specific details of the training data too well and is unable to generalize to new data.

To prevent overfitting, there are several techniques that can be used, such as collecting more diverse training data, *using regularization* to constrain the model, or early stopping to prevent the model from learning the specific details of the training data.

Underfitting can also be prevented by using a more complex model or collecting more training data. However, care must be taken to avoid overfitting, as a more complex model can easily result in overfitting if it is not properly regularized.

Summary,

Overfitting and underfitting are common problems in machine learning, and finding the right balance between model complexity and training data is essential for achieving good performance on test data. **By using regularization, early stopping, and other techniques,** it is possible to prevent overfitting and underfitting and build a model that can generalize well to new data.

Happy Learning!!!
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For practical implementation visit my [Github](#) repository.

About the Author: I am Ambarish, A Data Science Enthusiast. I'm currently learning Machine Learning/Deep Learning/NLP/Computer Vision and If you have any questions please connect with me on my [Linkedin](#) profile.