

Stacking

Stacking is an ensemble learning technique that combines the predictions of multiple base models to create a more powerful meta-model. Unlike bagging and boosting, which primarily focus on homogeneous base models, stacking allows for heterogeneous models.

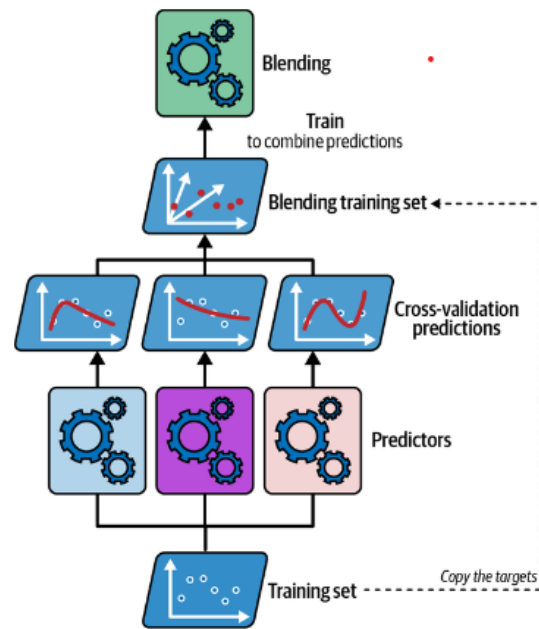
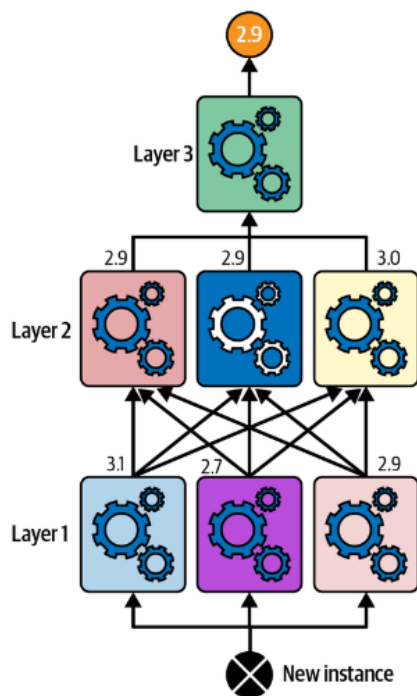
How Stacking Works

1. Base Models:

- Multiple base models (e.g., decision trees, random forests, support vector machines) are trained on the original dataset.
- These models make predictions on the same dataset.

2. Meta-Model:

- The predictions from the base models become the features for a new dataset.
- A meta-model (e.g., logistic regression, another decision tree) is trained on this new dataset.
- The meta-model learns to combine the predictions of the base models to make the final prediction.



Advantages

- Can leverage the strengths of different models .
- Often achieves better performance than individual models.
- Can be applied to various machine learning problems.

Disadvantages

- Can be computationally expensive due to training multiple models.
- Requires careful tuning of base models and meta-model.
- Prone to overfitting if not carefully implemented.