

Hyperparameter Tuning

Questions to address when choosing the optimal model

- Neural networks - what learning rate/nodes/layers to use?
- Decision Tree or Random Forest - what's the minimum number of samples to use at the leaf node?
- SVM - what's the optimum C parameter?

Hyperparameter: estimator parameter that is not fitted to the model

- Must be optimized separately

Techniques: grid search
random search

Grid Search

- Allows you to search for the best parameter combination over a set of parameters (e.g. p_1 & p_2 form a grid on the $x-y$ coordinates)
- Compute intensive
- `sklearn.grid-search`, `GridSearchCV`
grid search \uparrow cross validation

Random Search CV

- Each setting sampled from a distribution over possible parameter values

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