Train In Data

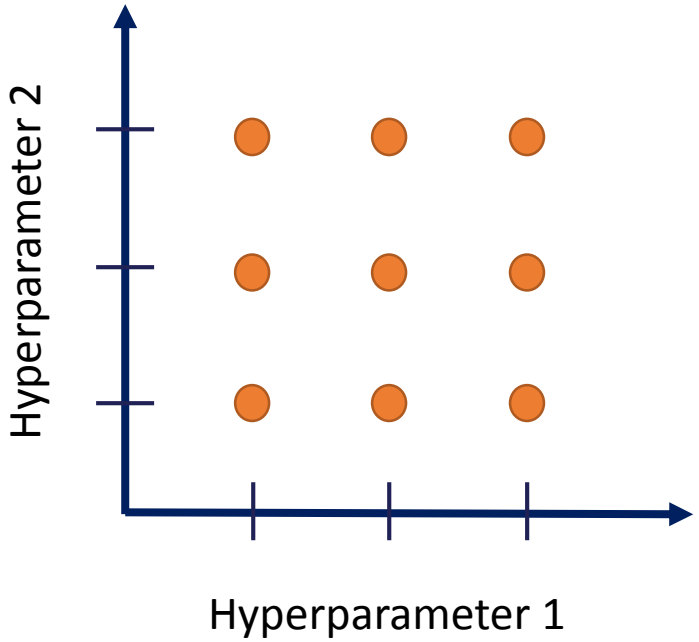
Grid Search

Grid Search of Hyperparameters

- Exhaustive search through a specified subset of hyperparameters of a learning algorithm.

- Examines **all possible combinations** of the specified hyperparameters.

Grid Search of Hyperparameters



- Examines **all possible combinations** of the specified hyperparameters.
- Cartesian product
- Combinations: $hyp_1 \times hyp_2 \times \ldots \times hyp_n$
  - Combinations: 3 × 3 = 9

Grid Search - Limitations

- **Curse of dimensionality**: possible combinations grow exponentially with the number of hyperparameters
- Computationally expensive
- Hyperparameter values are determined manually
- Not ideal for continuous hyperparameters
  - A subset of "reasonable" hyperparameter values are set manually
- Does not explore the entire hyperparameter space (not feasible)
- It performs worse than other searches (for models with complex hyperparameter spaces)

Grid Search - Advantages

- For models with simpler hyperparameter spaces works well.
- It can be parallelized.

Grid Search - Considerations

Grid Search is the most expensive method in terms of total computation time. However, if run in parallel, it is fast in terms of wall clock time.

Sometimes, we run a small grid, determine where the optimum lies, and then expand the grid in that direction.

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THANK YOU

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