



Hyperparameter Optimization



How to improve our models



What will be covered today

- Start recording

What are hyperparameters?

- What do you think?

What are hyperparameters?

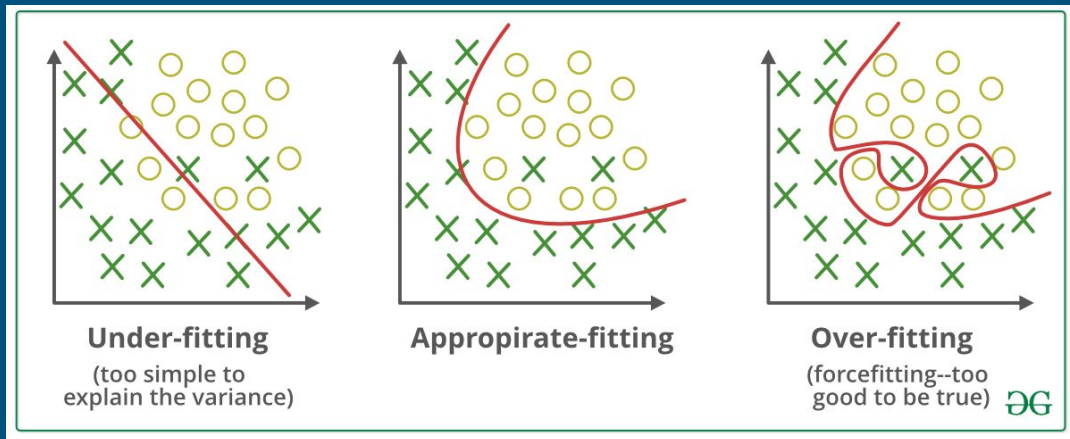
- Pull up decision tree classifier and look
- Talk about it

What would Hyperparameter Optimization mean?

- What do you think?

What would Hyperparameter Optimization mean?

- Finding the best combination of hyperparameters that results in a model that does not overfit or underfit our current data set?

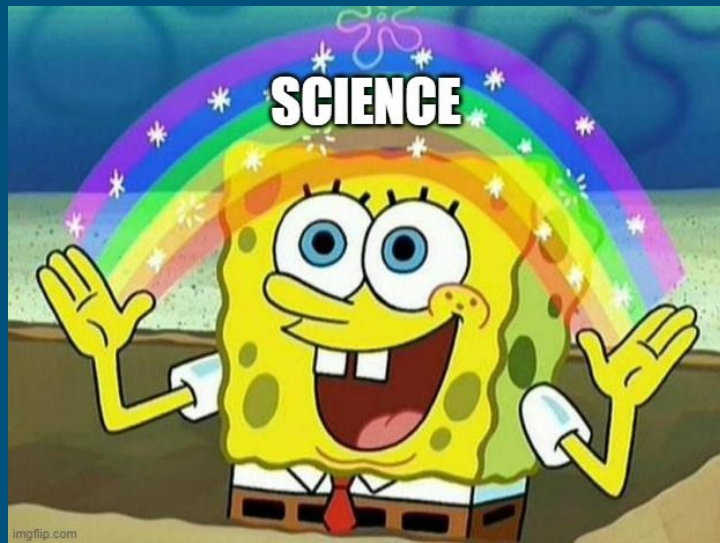


How could we find the best hyper parameters?

- What do you think?

How could we find the best hyper parameters?

- We just try a bunch and see what works the best!
- We look at papers that have made models with a similar set of features and target and see what worked for them.



How do we try a bunch of parameters?

- Do a “Grid Search”
 - With cross validation!
- Show example from finished demonstration



Overall workflow

1. Prep Data
2. Split target and features into separate dataframes
3. Make a training set and a testing set
4. Find best hyperparameters for your models using only training data
5. Do KFold cross validation to train and evaluate your models (with optimized hyperparameters- compare and see which model(s) do the best
6. Train your best models on all the training data and evaluate on your testing set

Let's do it!

- Do example as a class
- Remind class about training vs testing vs validation sets