

Thinking about model capacity

Puteaux, Fall/Winter 2020-2021

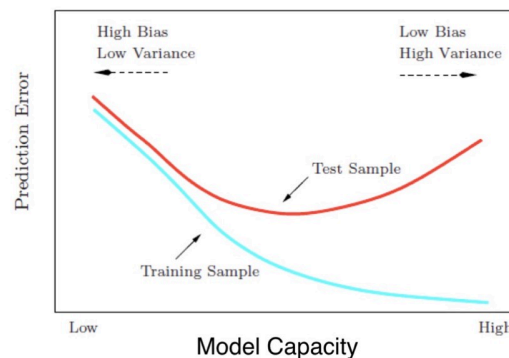
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#####  
##                               ##  
##  Deep Learning in Python  ##  
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§1 Introduction to Deep Learning in Python

§1.4 Fine-tuning keras models

§1.4.3 Thinking about model capacity

1. What is the connection between overfitting and model capacity?



2. What is a good workflow for optimizing model capacity?

- Start with a small network.
- Gradually increase capacity.
- Keep increasing capacity until the validation score is no longer improving.

3. How do sequential experiments function?

Hidden Layers	Nodes Per Layer	Mean Squared Error	Next Step
1	100	5.4	Increase Capacity
1	250	4.8	Increase Capacity
2	250	4.4	Increase Capacity
3	250	4.5	Decrease Capacity
3	200	4.3	Done

4. Practice question for experimenting with model structures:

- Run an experiment to compare two identical networks except that the 2nd network had an extra hidden layer. It could be seen that this 2nd network (the deeper network) had better performance. Given that, which of the following would be a good experiment to run next for even better performance?
 - ☐ Try a new network with fewer layers than anything you have tried yet.
 - ☒ Use more units in each hidden layer.
 - ☐ Use fewer units in each hidden layer.