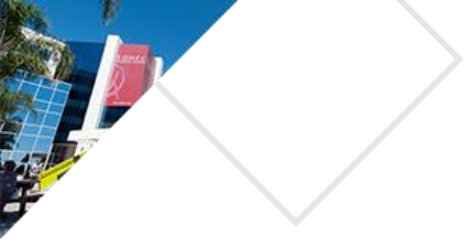
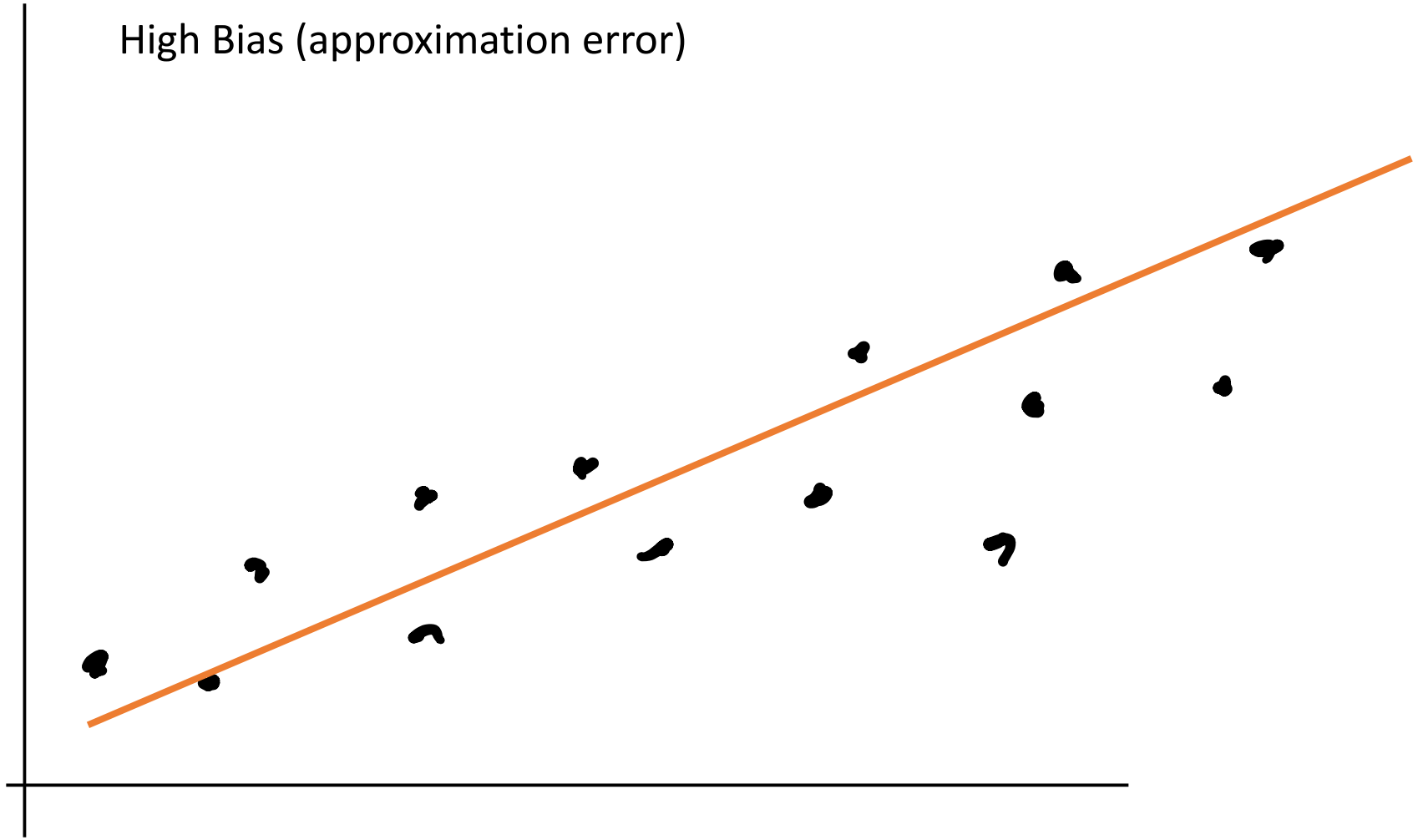


MODEL COMPLEXITY

Bias-Variance tradeoff

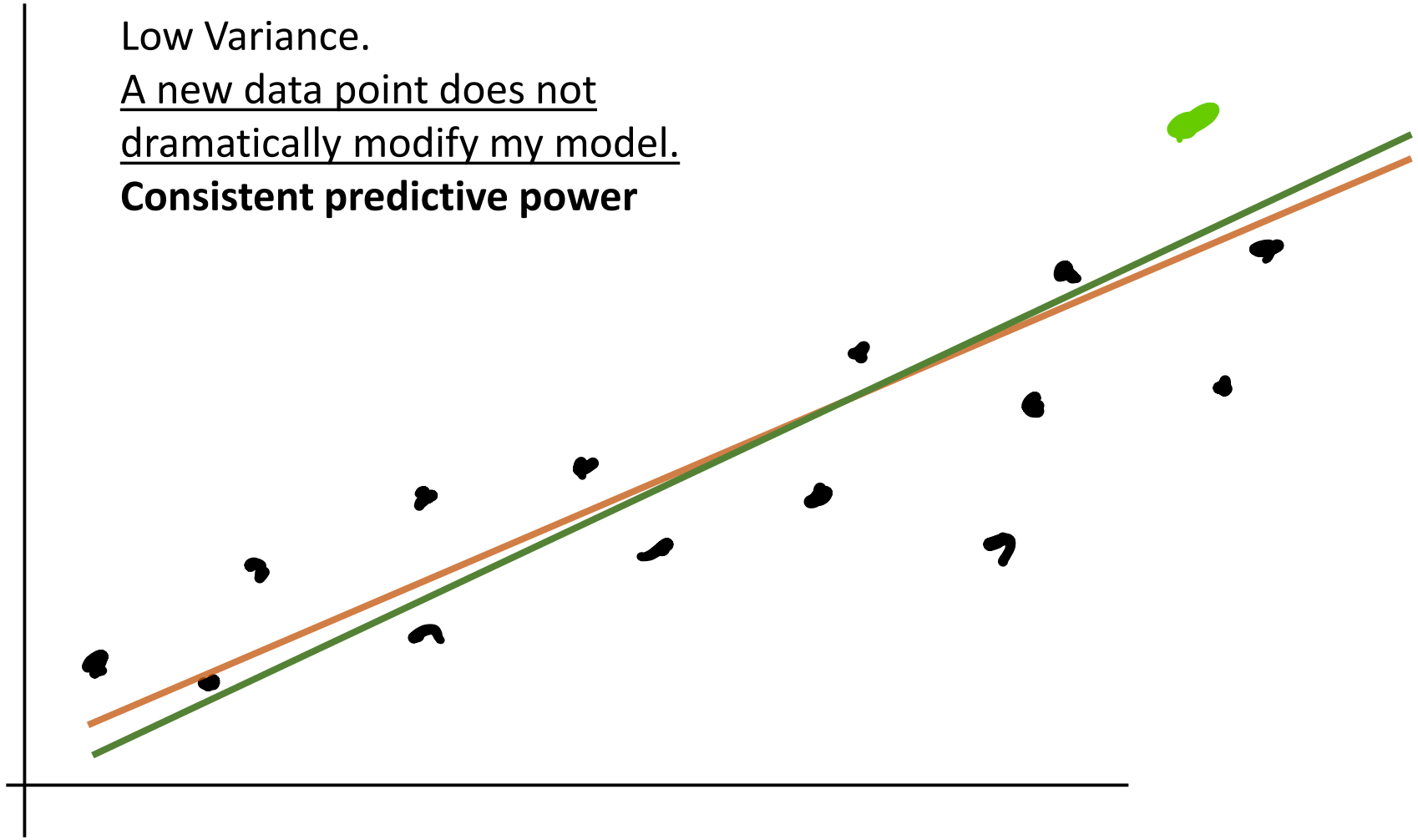
Model Complexity

Low complexity model



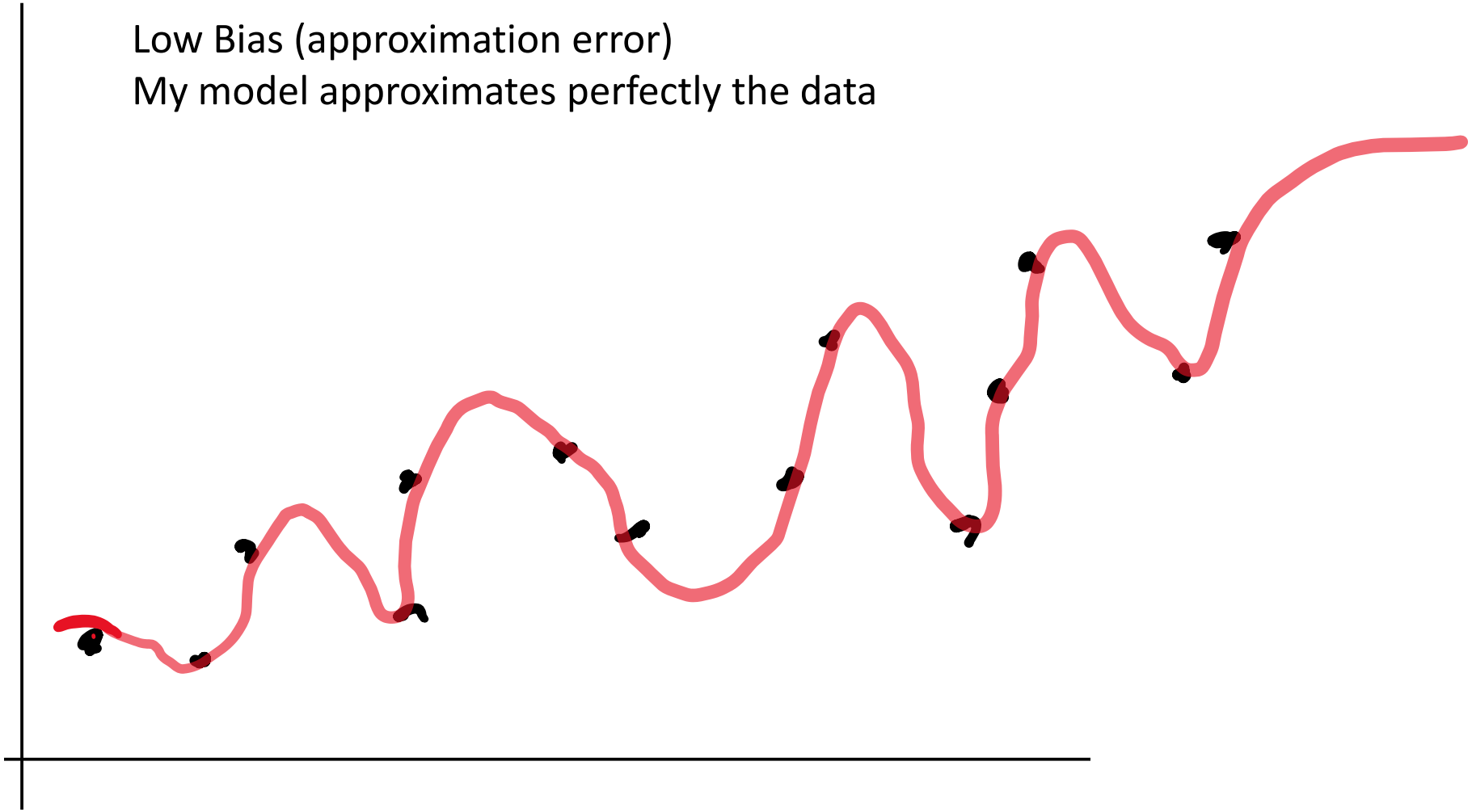
Low complexity model

Low Variance.
A new data point does not dramatically modify my model.
Consistent predictive power



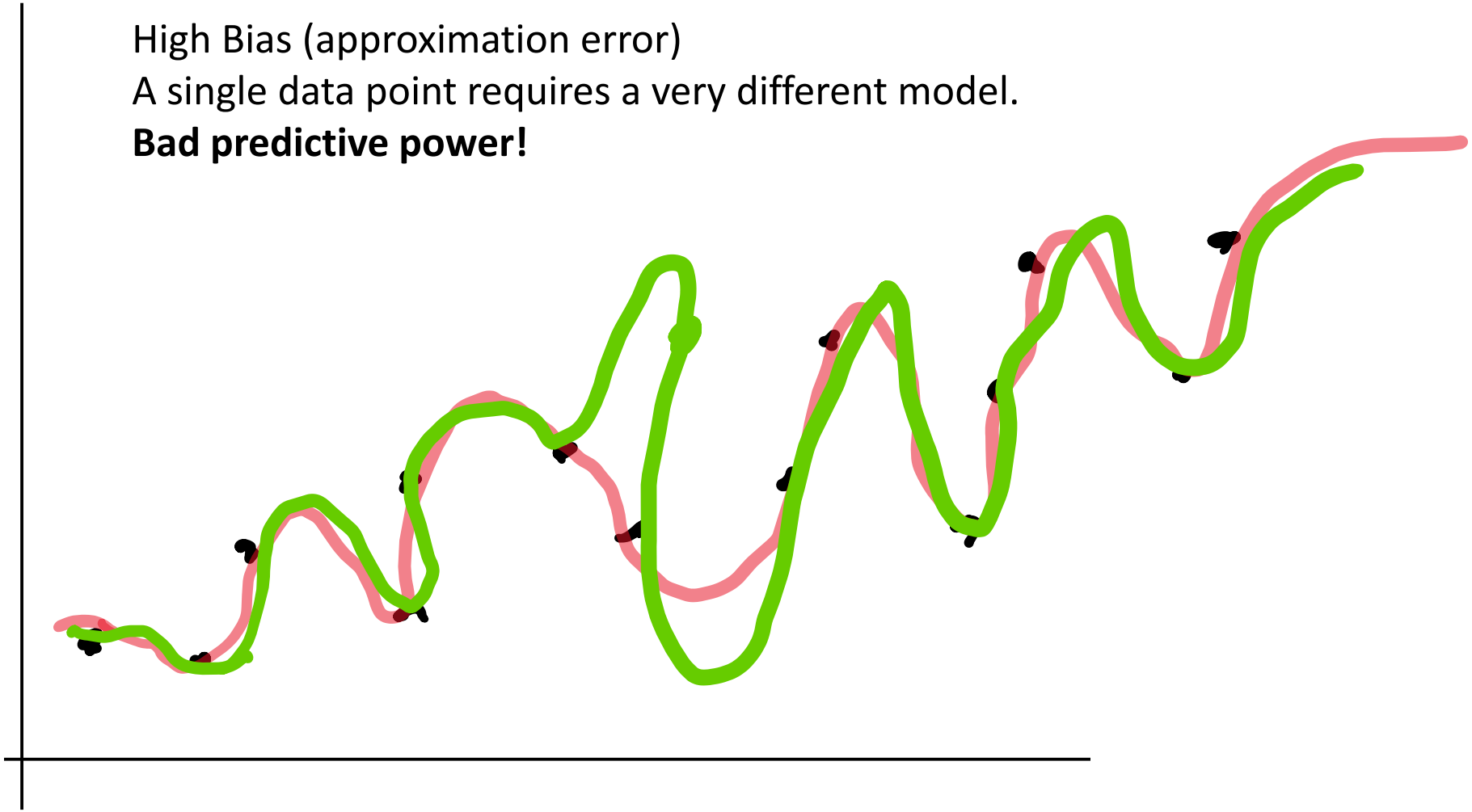
Model Complexity

Low Bias (approximation error)
My model approximates perfectly the data



Model Complexity

High Bias (approximation error)
A single data point requires a very different model.
Bad predictive power!



Things to consider

- We need to test out models with ‘unseen’ data to test the predictive power.
- This is called **cross-validation**.

- We also use techniques to reduce model complexity without hurting the performance.
- This is called **model selection/regularisation**.

- A very complex model that fits well the data but is unable to predict correctly new scenarios is not very useful.