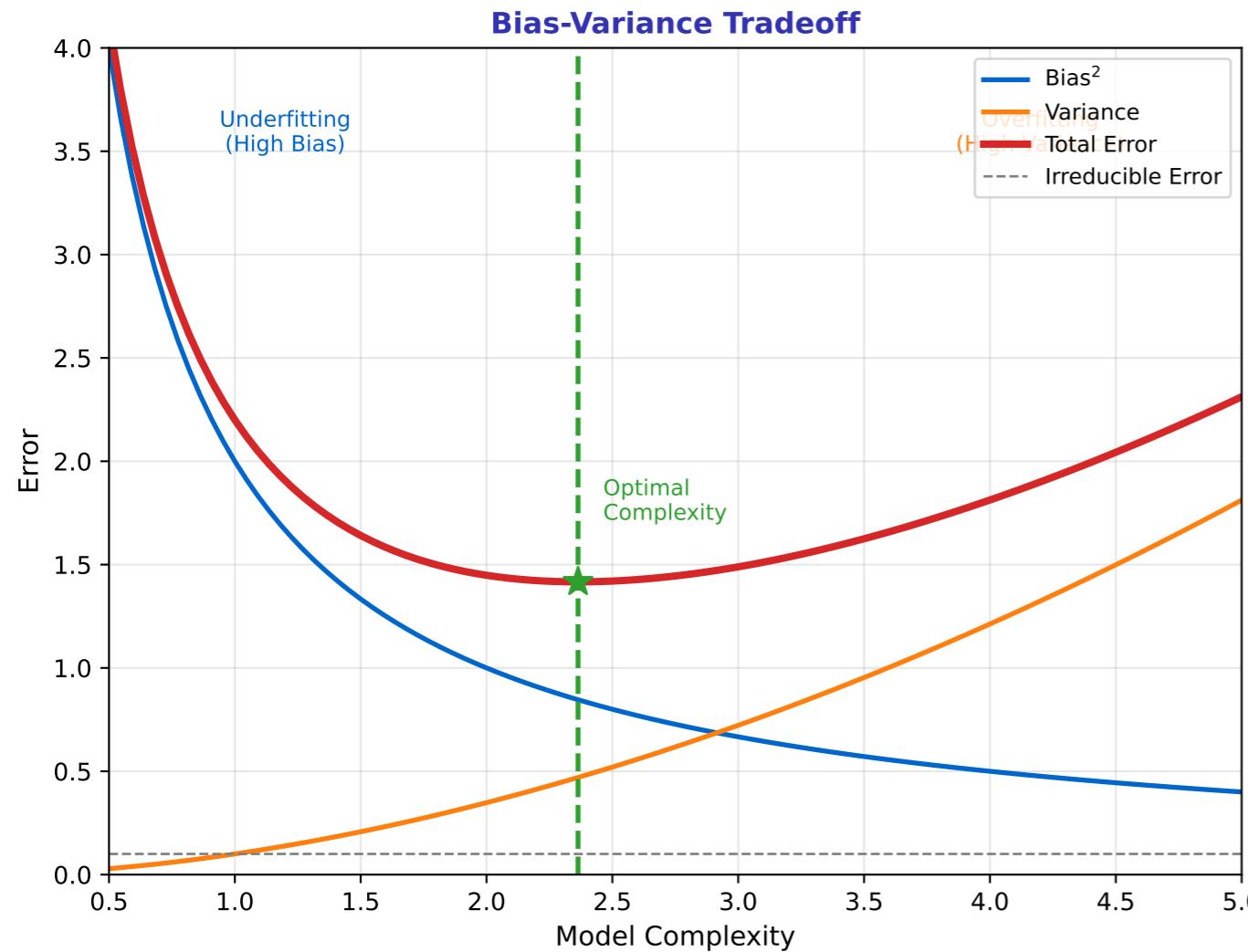
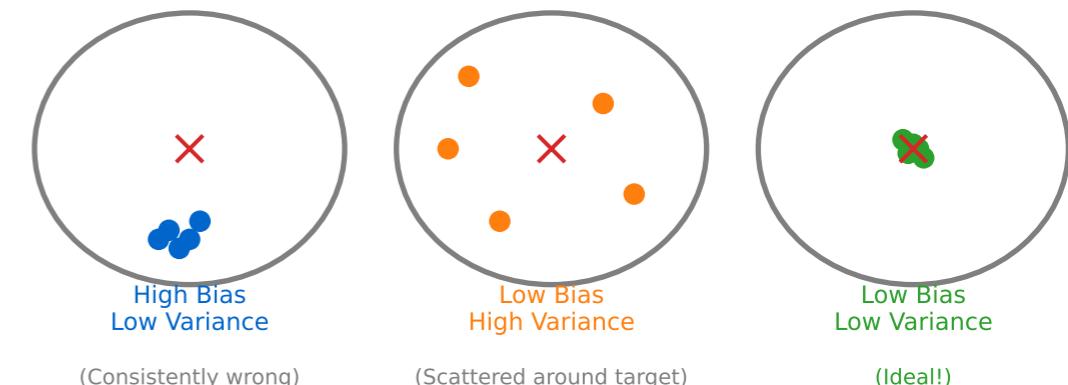


Bias-Variance Tradeoff: The Fundamental Challenge



Understanding Bias vs Variance



High Bias
Low Variance

(Consistently wrong)

Low Bias
High Variance

(Scattered around target)

Low Bias
Low Variance

(Ideal!)

$$\text{Total Error} = \text{Bias}^2 + \text{Variance} + \text{Irreducible Noise}$$

We can control Bias and Variance through model complexity