



Google-DGC METU

# Reducing Variance and Bias

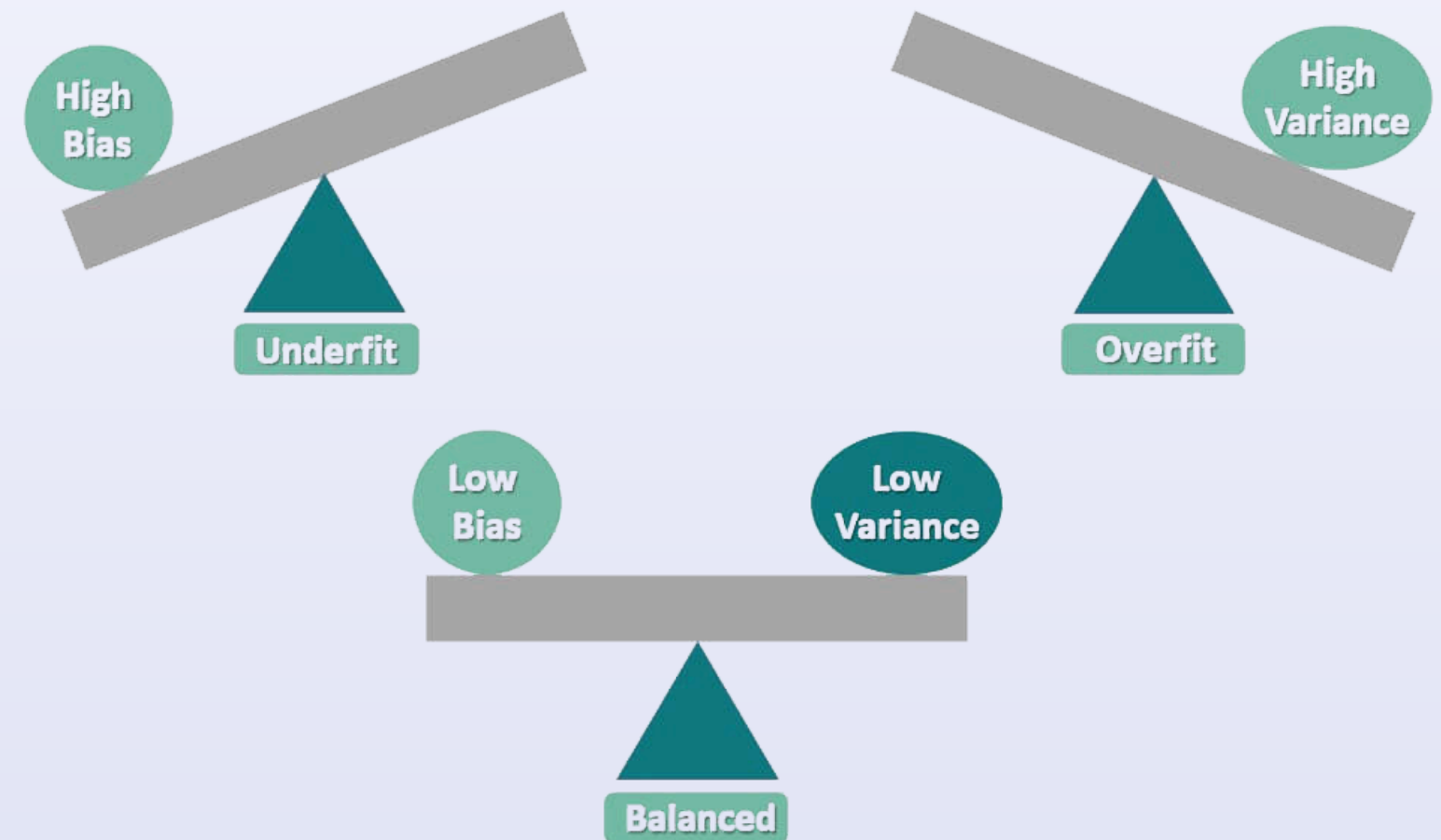
Presented by AI/ML Team



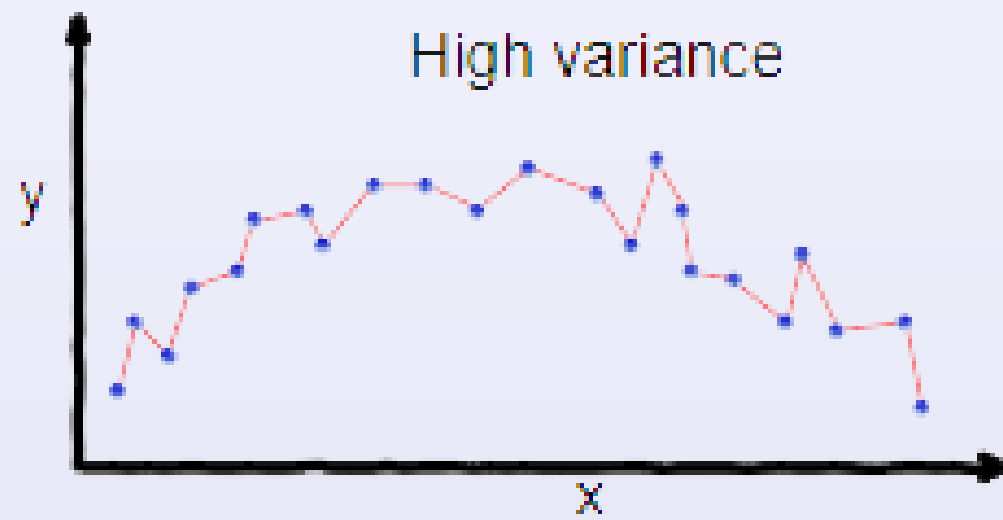
# Week-7

- Reducing variance and bias

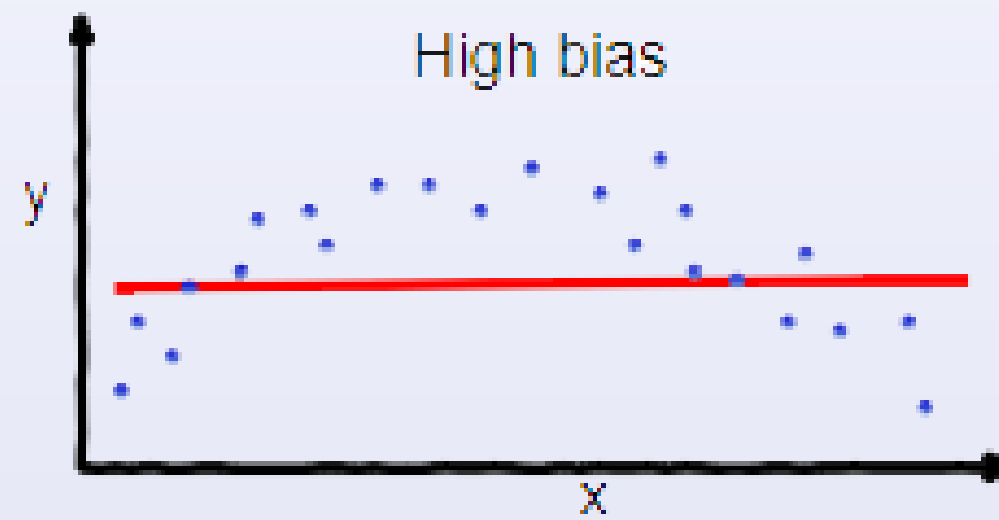
# Variance and Bias



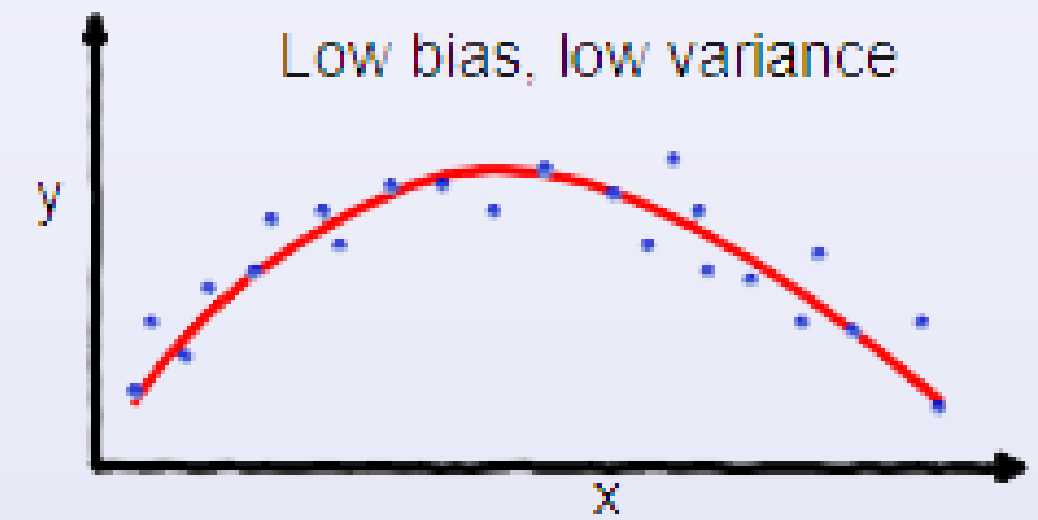
# The Bias-Variance Tradeoff



overfitting

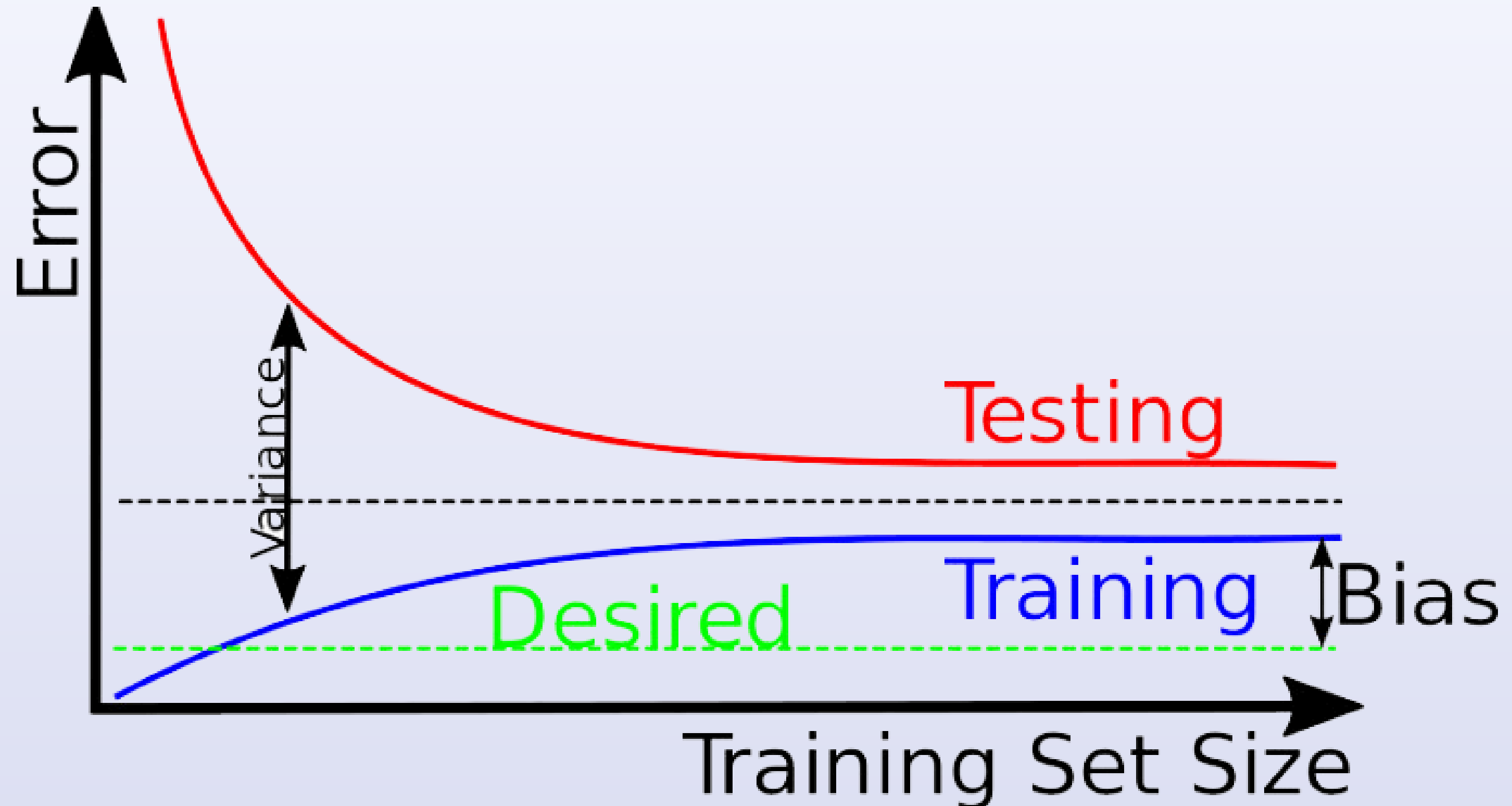


underfitting



Good balance

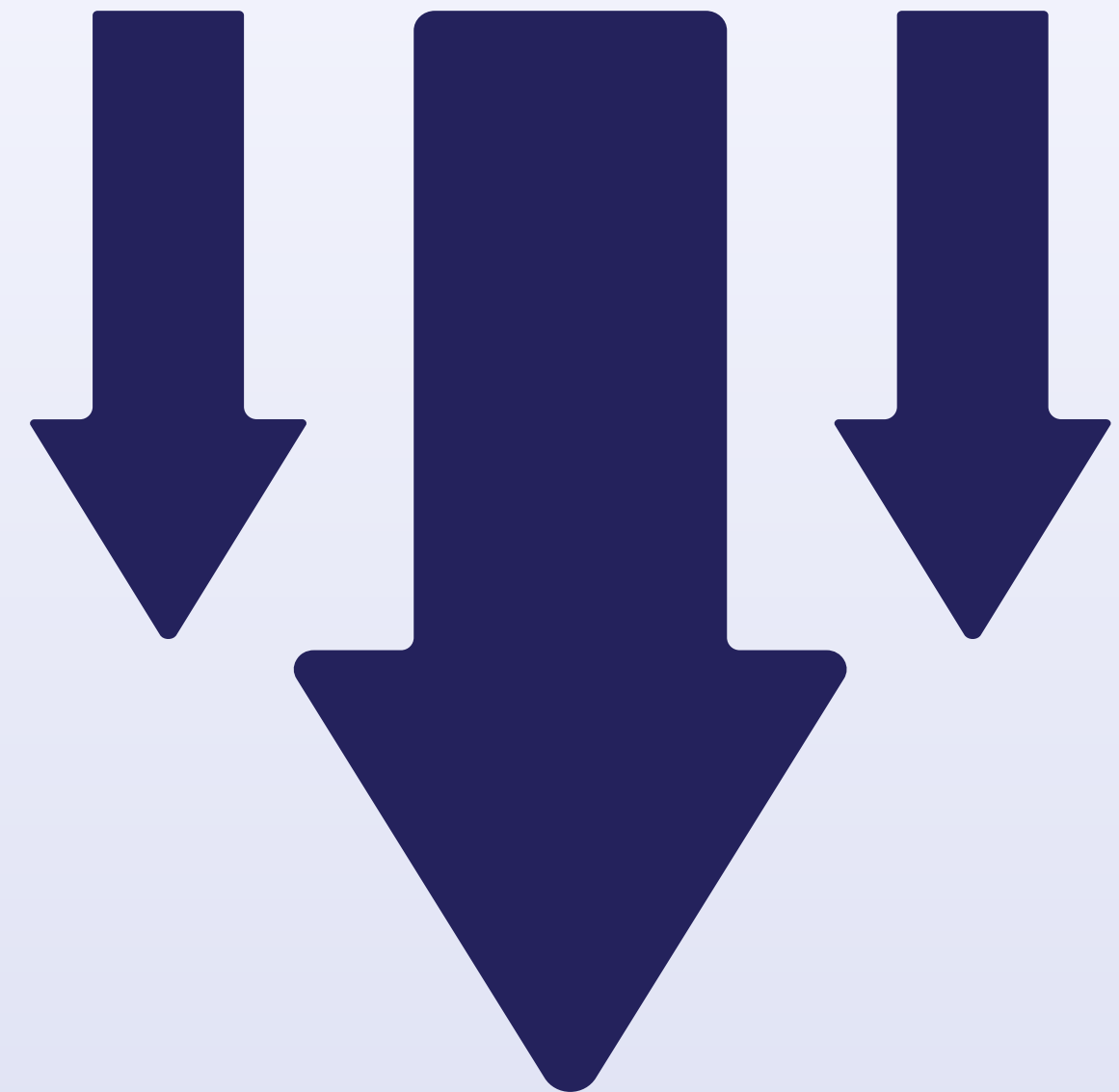
# The Bias-Variance Tradeoff



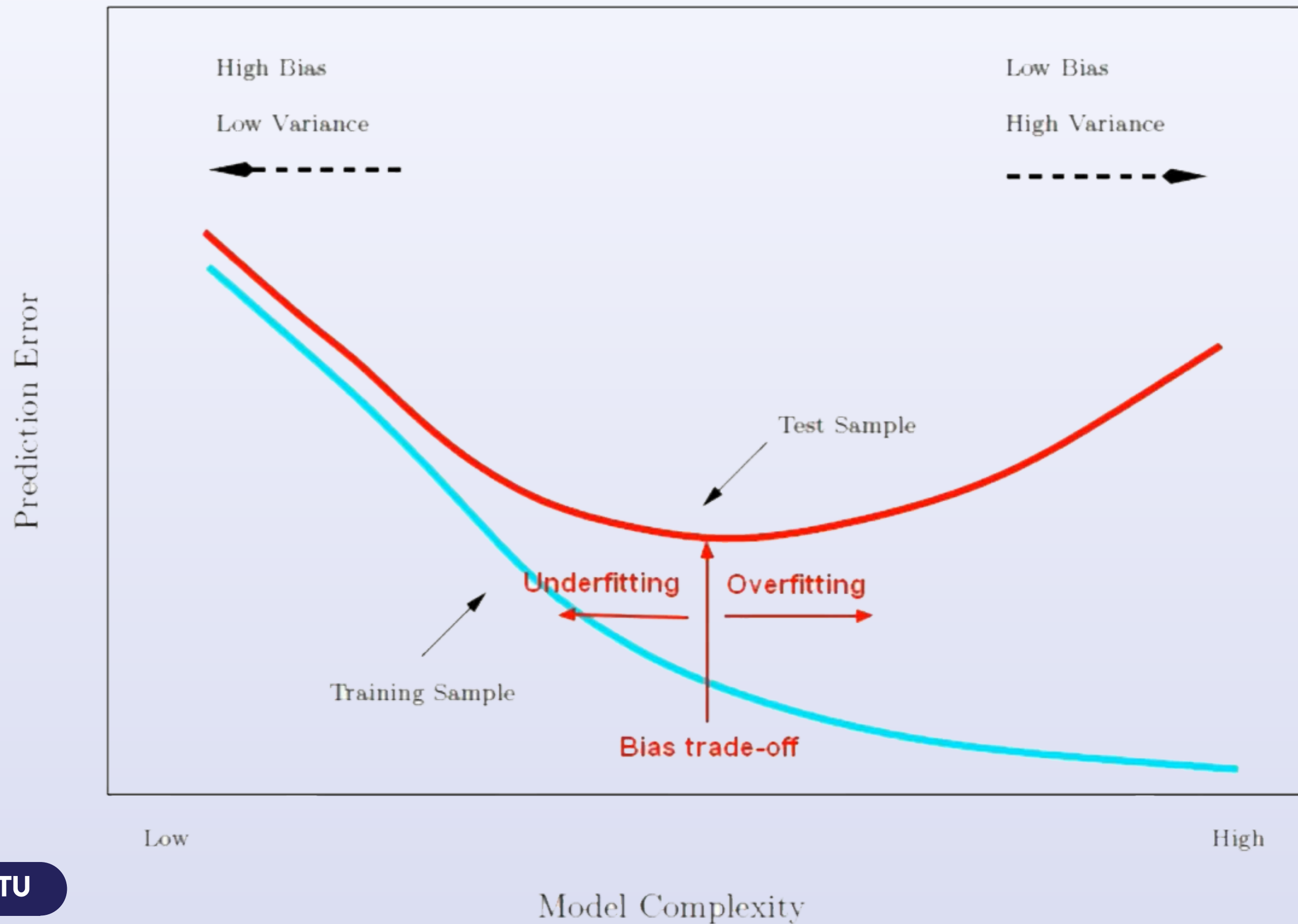


# Reducing Techniques

# Reducing Variance (Addressing Overfitting)



# Simplify the Model



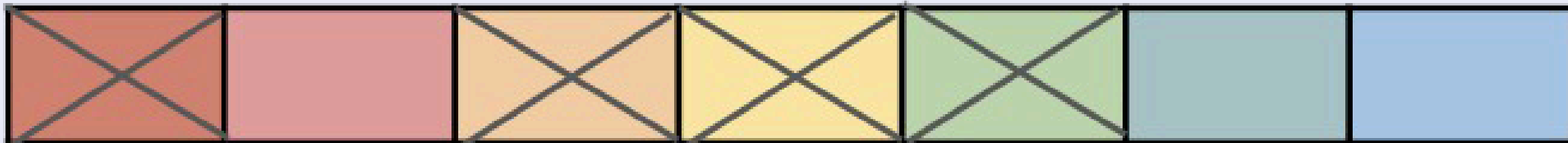


# Feature Selection

All Features



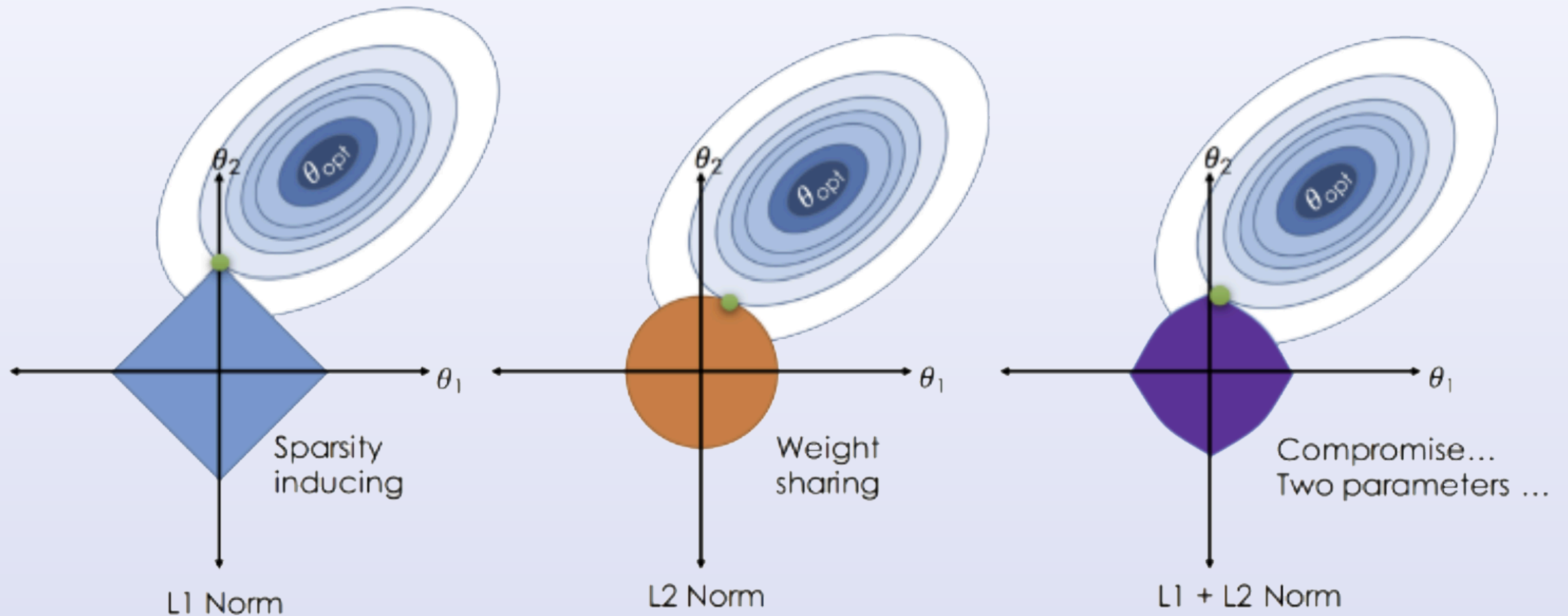
Feature Selection



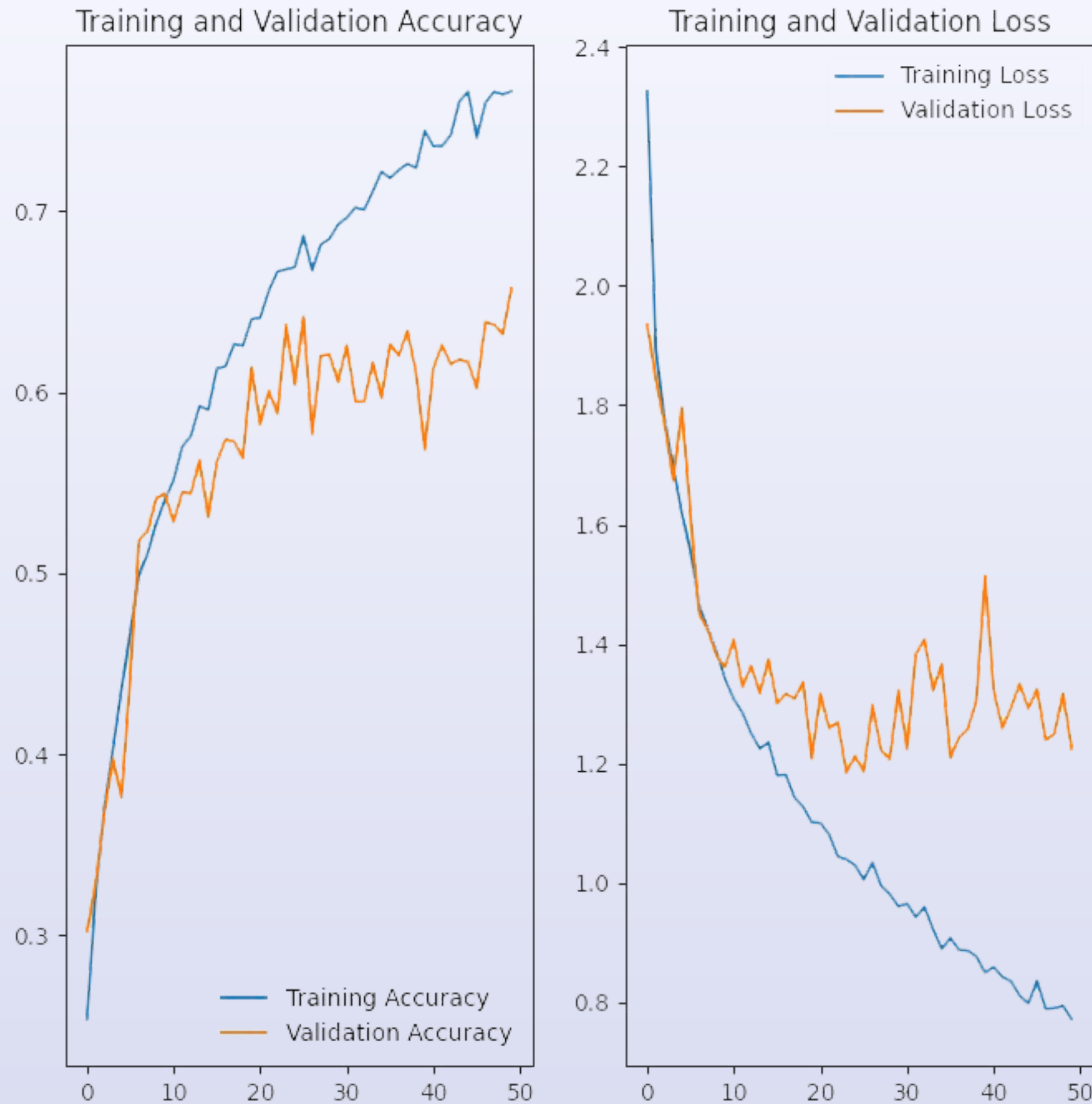
Final Features



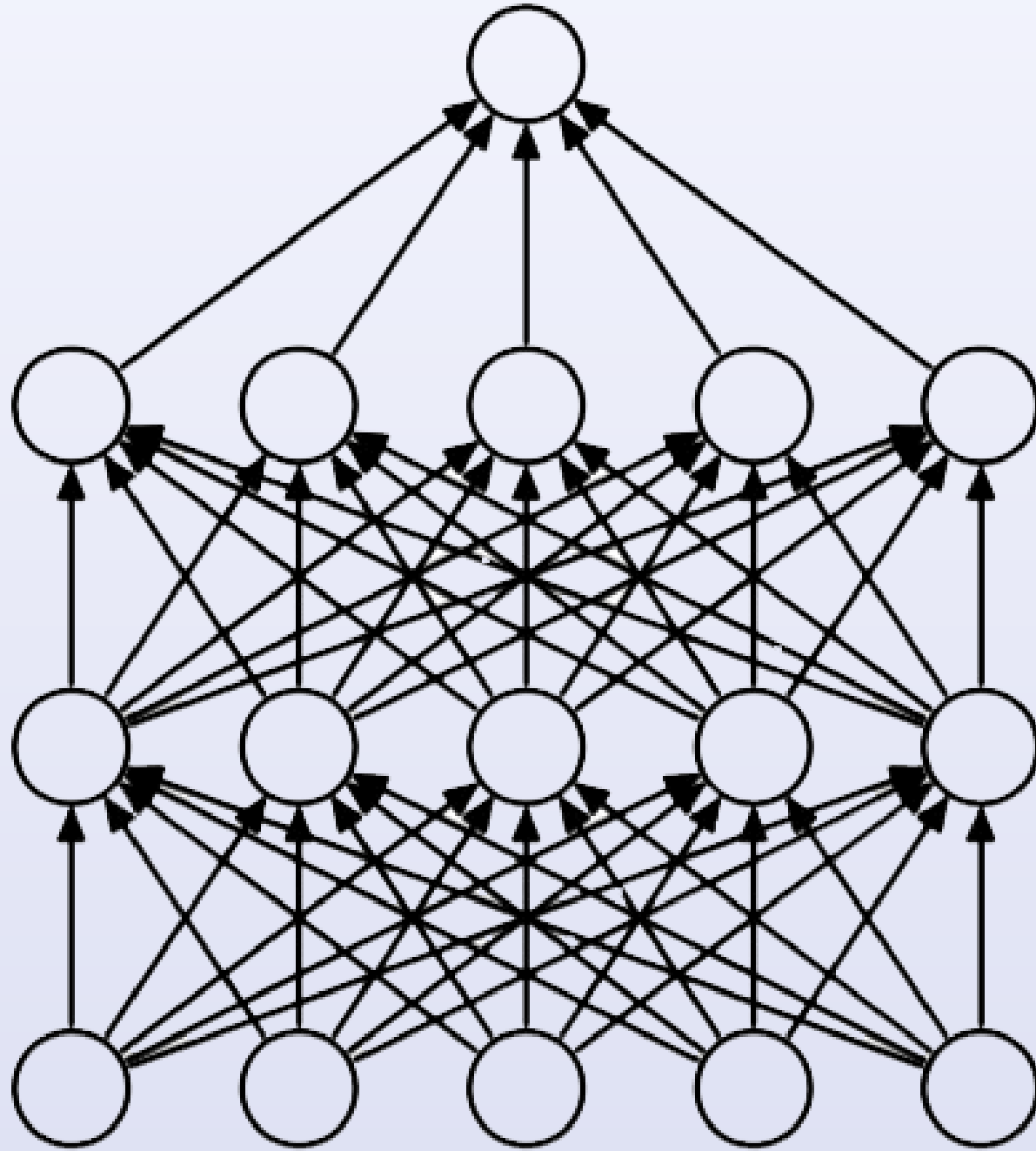
# Regularization



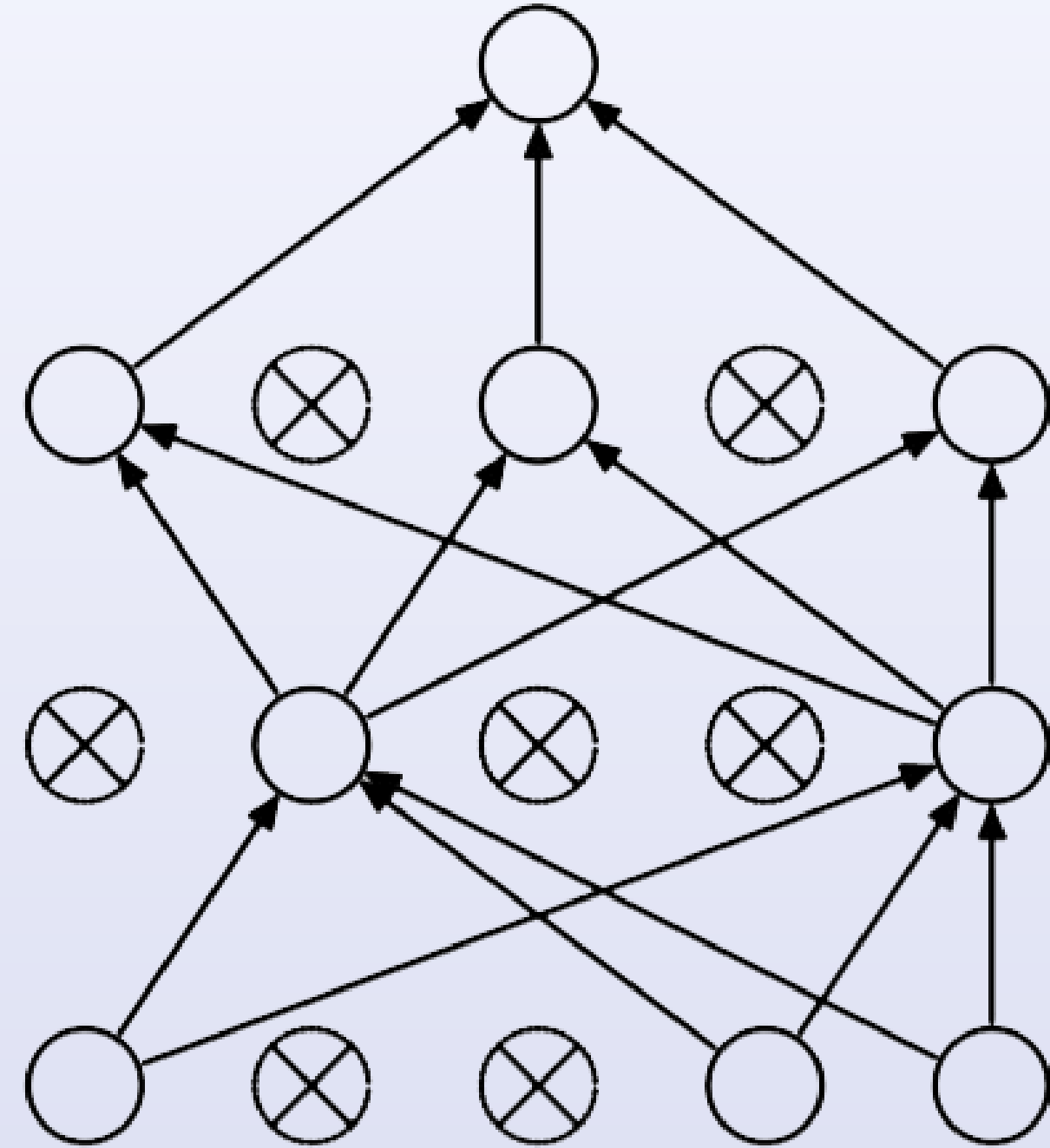
# Early Stopping



# Dropout

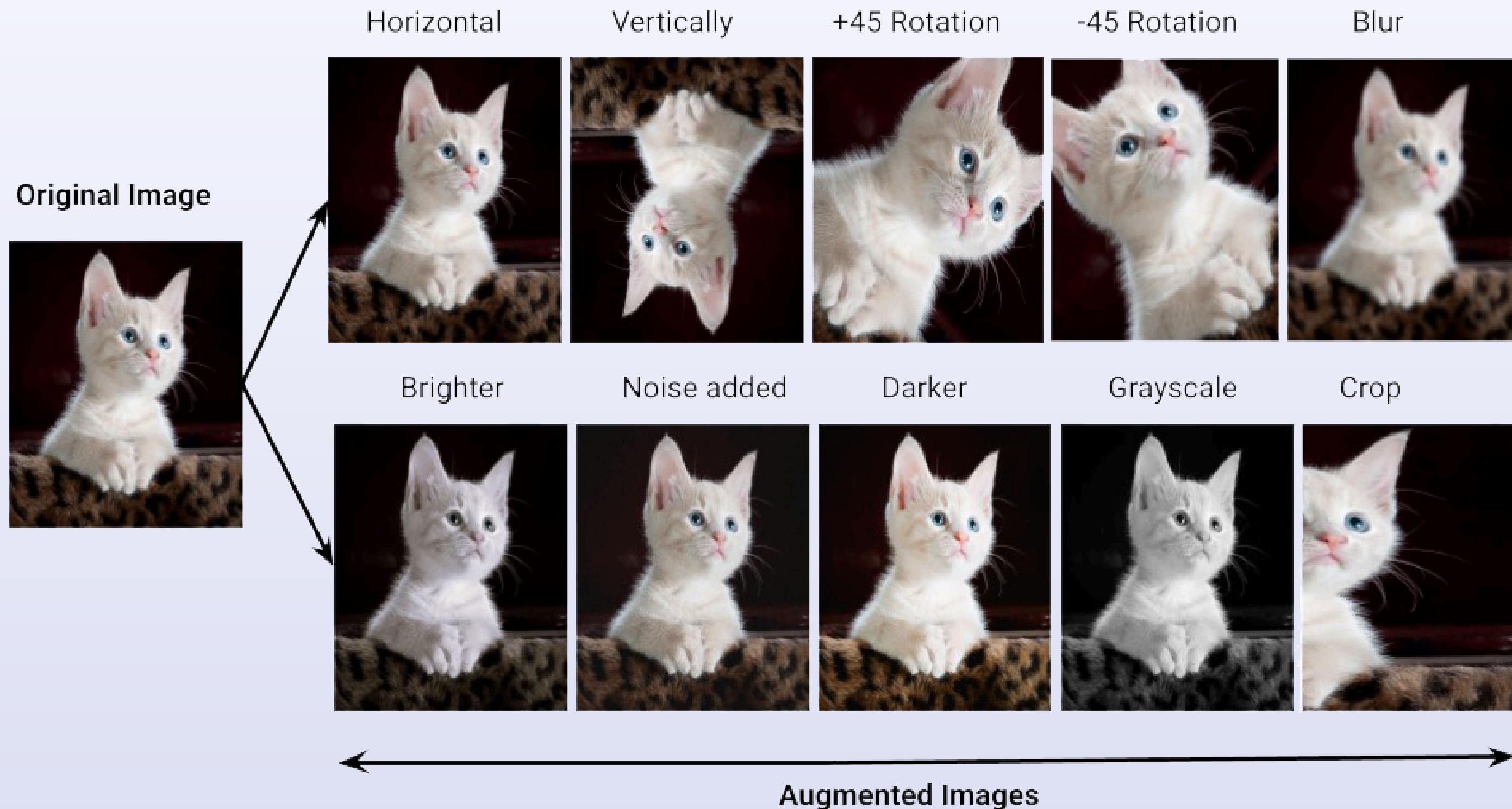


(a) Standard Neural Net



(b) After applying dropout.

# Data Augmentation



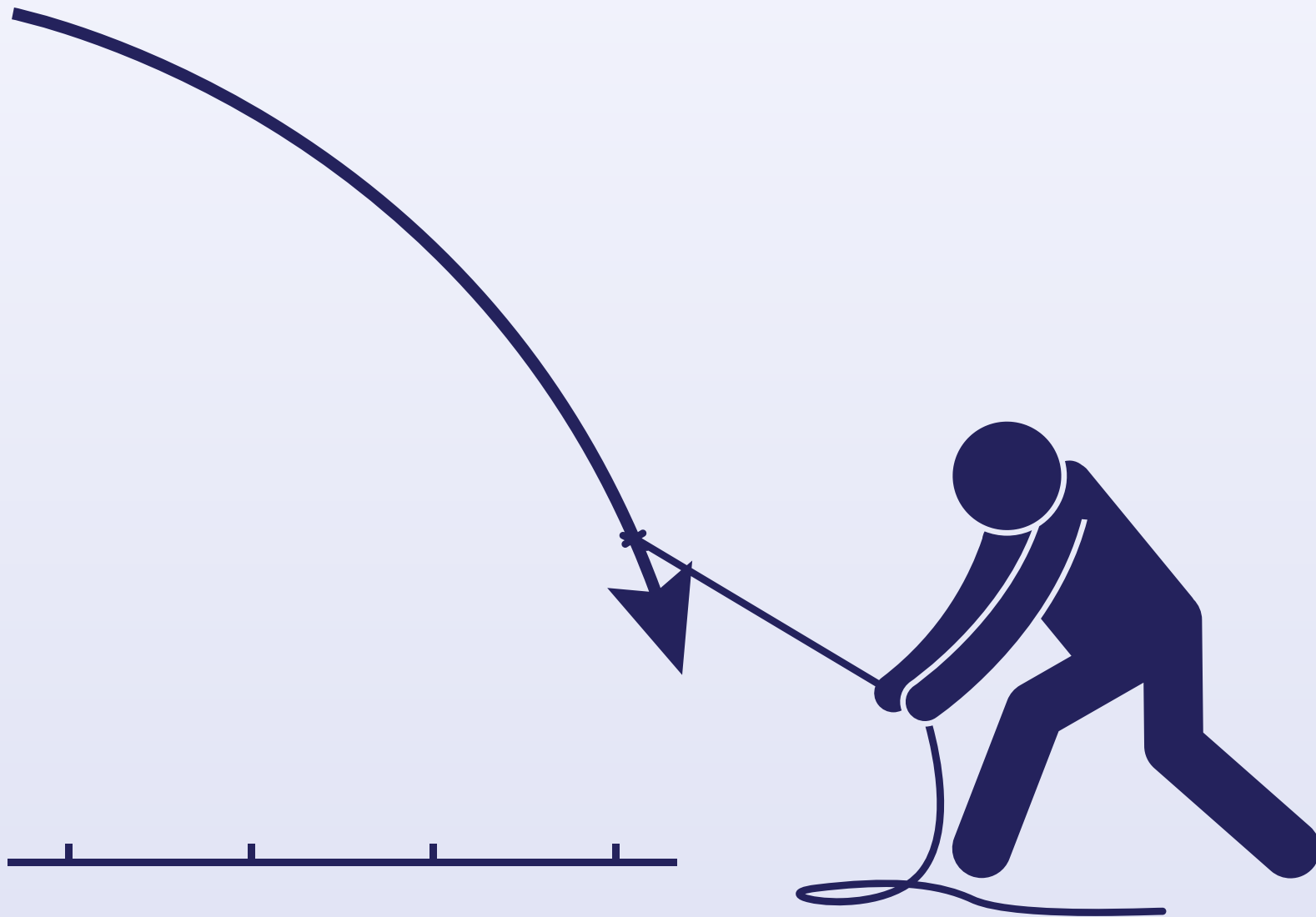
# Get More Data

m o r e

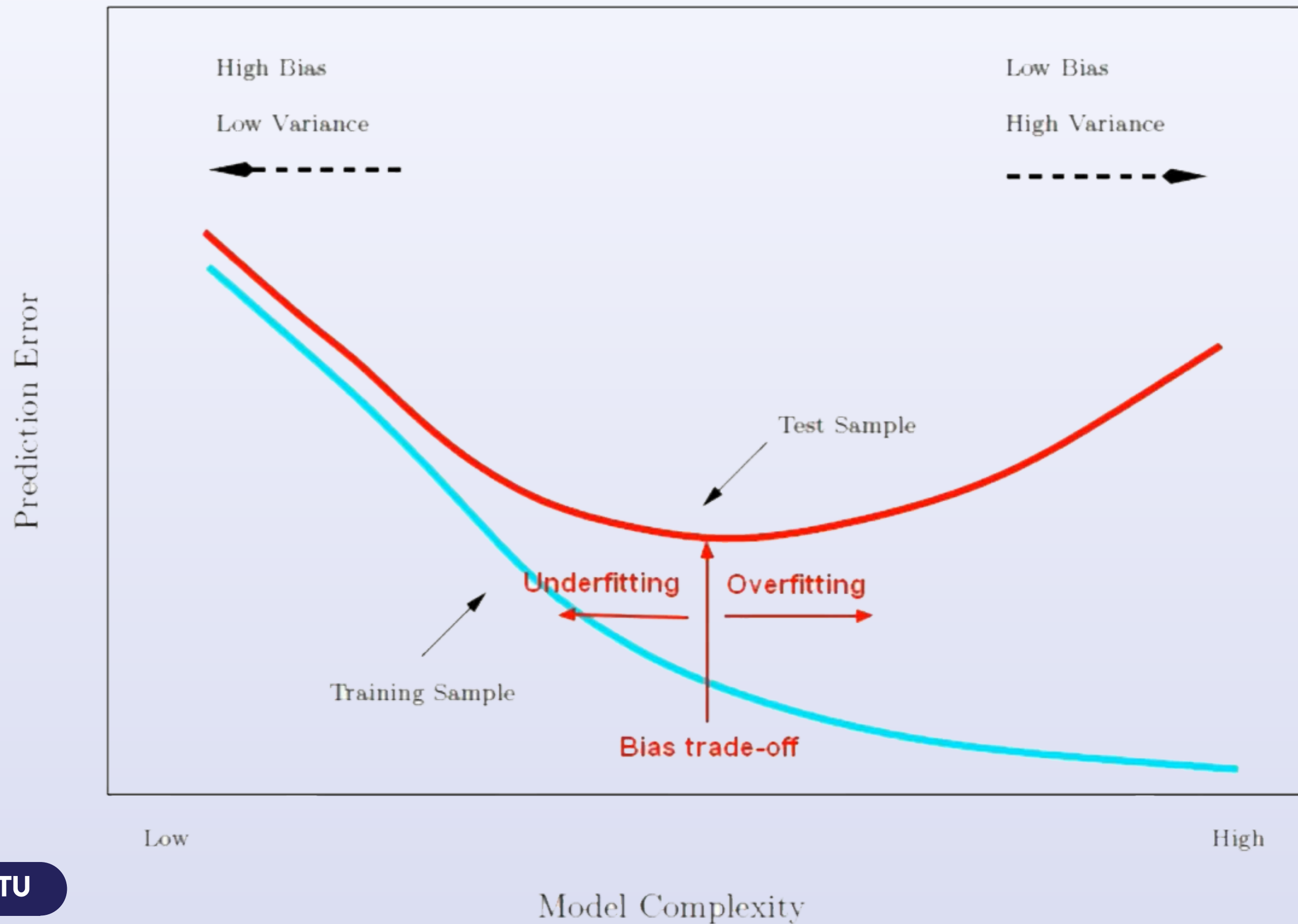
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# Reducing Bias (Addressing Underfitting)



# Increase Model Complexity



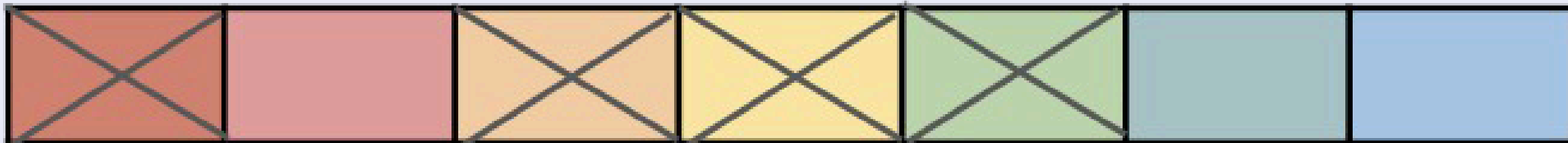


# Feature Selection

All Features



Feature Selection



Final Features



# Decrease or Remove Regularization

