Question 3: What is the difference between classification and regression algorithms?

A) Classification predicts discrete labels or categories, while regression predicts continuous values.

B) Classification predicts continuous values, while regression predicts discrete labels or categories.

C) Classification and regression algorithms are essentially the same, just used for different types of datasets.

D) Classification is only applicable to linear relationships, while regression is suitable for non-linear patterns.

E) Regression is used for image recognition, while classification is used for predicting stock prices.

**Question 1: What does bias refer to in machine learning?**

* A) The error due to random variations
* B) The error caused by assumptions
* C) The inherent uncertainty in the system
* D) The sensitivity to fluctuations in training data
* E) None of the above

**Question 2: Which of the following statements about variance is correct?**

* A) Variance results from simplifying assumptions
* B) Variance is the deviation from the target value
* C) Variance is controllable and should be minimized
* D) Variance is due to natural variability within a system
* E) None of the above

**Question 3: Bias and variance are components of which type of error?**

* A) Irreducible error
* B) Reducible error
* C) Inherent uncertainty
* D) Systematic error
* E) None of the above

**Question 4: Which error can be reduced by selecting appropriate models and suitable training data?**

* A) Bias
* B) Variance
* C) Both bias and variance
* D) Neither bias nor variance
* E) All of the above

**Question 5: What is the primary goal when balancing bias and variance?**

* A) Minimizing both bias and variance
* B) Maximizing bias
* C) Maximizing variance
* D) Achieving a trade-off for accurate models
* E) None of the above