

STA 3180 Statistical Modelling: Resampling

1. What is the difference between bootstrapping and resampling?

Answer: Bootstrapping is a resampling technique that involves randomly drawing samples with replacement from a dataset to create new datasets. Resampling is a general term for any method of using existing data to generate new data.

2. Explain the concept of cross-validation and how it is used in resampling.

Answer: Cross-validation is a resampling technique used to evaluate the performance of a model. It involves splitting the dataset into two parts, a training set and a test set. The model is trained on the training set and then tested on the test set. The performance of the model is then evaluated based on the results of the test set.

3. Describe the jackknife resampling technique and explain how it is used.

Answer: The jackknife resampling technique is a resampling method that involves repeatedly leaving out one observation from the dataset and then calculating the statistic of interest. This process is repeated for each observation in the dataset. The resulting statistics are then averaged to obtain an estimate of the population parameter. This technique is used to estimate the bias and variance of a statistic.

4. Explain the concept of bootstrapping and how it is used in resampling.

Answer: Bootstrapping is a resampling technique that involves randomly drawing samples with replacement from a dataset to create new datasets. These new datasets are then used to calculate the statistic of interest. This technique is used to estimate the variability of a statistic and to assess the accuracy of a model.

5. What is the difference between parametric and non-parametric resampling?

Answer: Parametric resampling involves making assumptions about the underlying distribution of the data. Non-parametric resampling does not make any assumptions about the underlying distribution of the data.