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1. How do you control for biases?

* Ensure that the data collection process is impartial and representative of the entire population.
* Choose features that are relevant and do not introduce bias.
* Use techniques like cross-validation to validate the model on different subsets of the data.
* Implement regularization methods to prevent overfitting to biased or noisy data.
* Use fairness metrics to assess and ensure that the model's predictions are equitable across different groups.

1. What are confounding variables?

Confounding variables are factors other than the independent variable being studied that might affect the dependent variable. These variables can cause a false association between the studied variables, misleading the results of the study. Proper experimental design, such as randomization and stratification, or statistical methods like regression adjustment, can help control for confounders.

1. What is A/B testing?

A/B testing is a statistical method used to compare two versions of a variable to determine which performs better in a controlled environment.

1. When will you use Welch t-test?

The Welch t-test is used when comparing the means of two groups that may have different variances and possibly different sample sizes.

1. A piece of paper with writing on it

   Description automatically generatedA company claims that the average time its customer service representatives spend on the phone per call is 6 minutes. You believe that the average time is actually higher. You collect a random sample of 50 calls and find that the average time spent on the phone per call in your sample is 6.5 minutes, with a standard deviation of 1.2 minutes. Test whether there is sufficient evidence to support your claim at a significance level of 0.05.
2. A researcher wants to determine whether there is a difference in the mean scores of two groups of students on a math test. Group A consists of 25 students who received traditional teaching methods, while Group B consists of 30 students who received a new teaching method. The average score for Group A is 75, with a standard deviation of 8, and the average score for Group B is 78, with a standard deviation of 7. Test whether there is a significant difference in the mean scores of the two groups at a significance level of 0.05.

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