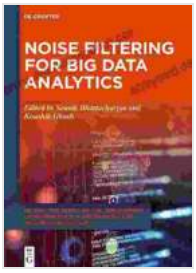
Noise Filtering for Big Data Analytics: Applications and Techniques

Noise is a common problem in big data analytics. It can come from a variety of sources, such as measurement errors, data entry errors, and outliers. Noise can make it difficult to analyze data accurately and can lead to incorrect s.



Noise Filtering for Big Data Analytics (De Gruyter Series on the Applications of Mathematics in Engineering and Information Sciences Book 12)

by Souvik Bhattacharyya

4.7 out of 5

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There are a number of techniques that can be used to filter noise from big data. These techniques can be divided into two general categories: preprocessing and postprocessing.

Preprocessing Techniques

Preprocessing techniques are applied to data before it is analyzed. These techniques can remove or reduce noise by identifying and correcting errors,

removing outliers, and smoothing data.

- **Data Cleaning:** Data cleaning is the process of identifying and correcting errors in data. This can be done manually or using automated tools.
- **Outlier Removal:** Outliers are extreme values that can skew the results of data analysis. Outliers can be removed using a variety of statistical techniques.
- **Data Smoothing:** Data smoothing is the process of removing small fluctuations from data. This can be done using a variety of mathematical techniques, such as averaging or filtering.

Postprocessing Techniques

Postprocessing techniques are applied to data after it has been analyzed. These techniques can remove or reduce noise by identifying and correcting errors in the analysis process.

- **Data Validation:** Data validation is the process of checking the results of data analysis to ensure that they are accurate and reliable. This can be done by comparing the results to known values or by using statistical techniques.
- **Error Correction:** Error correction is the process of identifying and correcting errors in the data analysis process. This can be done manually or using automated tools.

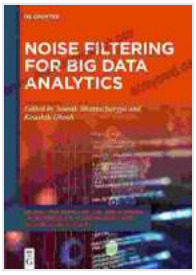
Applications of Noise Filtering

Noise filtering is used in a wide variety of applications in big data analytics, including:

- **Fraud Detection:** Noise filtering can be used to identify fraudulent transactions in financial data.
- **Customer Segmentation:** Noise filtering can be used to identify customer segments based on their behavior.
- **Predictive Analytics:** Noise filtering can be used to improve the accuracy of predictive analytics models.
- **Risk Assessment:** Noise filtering can be used to assess the risk of financial investments.

Noise filtering is a critical step in big data analytics. By removing or reducing noise from data, you can improve the accuracy and reliability of your analysis.

There are a number of different noise filtering techniques available. The best technique for your application will depend on the specific data set and the desired results.



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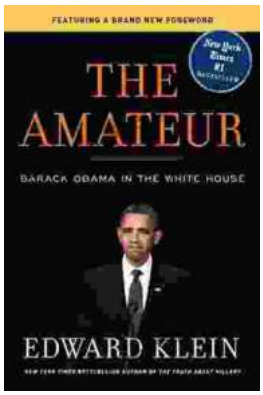

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