CopyProgramming

Home PHP AI Front-End Mobile Database Programming languages CSS NodeJS Cheat sheet

🏠 › Exploratory data analysis

Finding the Optimal Window Size for Moving Data Analysis

Author: Scott Klein   Date: 2023-04-21

Is there a reliable way to choose the appropriate window size? One idea I had was to calculate the multivariate variance of mean, standard deviation, and other factors, and then select the window size that results in the lowest variance. However, it's important to keep in mind that selecting a window size of a certain length will limit the range of functions that can be extracted.

Table of contents

How to determine moving window size?

Question:

The method of data analysis I am currently utilizing is moving window .

As an illustration, I calculate various statistical measures such as the mean, standard deviation, and others within a designated window.

I am curious if there exists a reliable standard for determining the appropriate dimensions of determine window .

I considered calculating the variance of multiple variables, including mean, standard deviation, and other metrics.

Choose the window size that results in the lowest variance.

Generally, a larger window size results in a smaller variance in most cases.

I am in a bind... Is there a specific standard that can resolve the issue of identification?

Do I need to select a window size or rely on my visual preference to choose the most visually pleasing option?

Solution 1:

Whuber's suggestion holds merit. It is recommended to adopt a methodology, such as bootstrapping and stability criterion, to ensure that the estimates do not

change significantly with slight perturbations in the data. Alternatively, relying on robust theoretical results can also aid in determining if the sample size is sufficient to compute accurate estimates.

To ensure the stationary hypothesis is not violated further, it is advisable to utilize only the necessary amount of data that can provide you with a robust assurance (theoretical or empirical) regarding the significance of your findings. Exceeding this limit will only result in signal smoothing.

When estimating mean, variance, and other similar values, it is possible to discover theoretical results and guidelines. However, for more complex processes such as machine learning algorithms, an empirical study is necessary to determine the minimum window length. For instance, refer to this study about clustering of correlated random variables .

Solution 2:

Typically, when selecting the dimensions of a sliding window , one must choose a size that captures sufficient information. If the size is too large, there will be an abundance of irrelevant information resulting in loss of resolution. On the other hand, if the size is too small, important details will be lost.

To illustrate, consider a real-valued function composed of various sinusoids with distinct periods. Selecting a window of size L will limit the range of functions that can be extracted.

Solution 3:

Having a computer science background, I approached this problem from a different perspective and came up with an intuitive approach that seemed reasonable to me.

A smaller window size can enhance the "predictive value" by increasing sensitivity towards variations in the process being sampled.

Suppose that both are measured using the same unit of predictive value, which is equivalent to predictive error in either bias or variance.

A larger window size is preferred as it reduces the impact of small sample size on noise. The value being referred to here is the standard deviation of the sample.

The square root of the number of samples in the window divided by the size of the samples in the window is represented by standard_deviation .

Regarding predictive value, the distinction lies in the comparison of the mean of all samples to the mean of samples specifically located within the window.

Our objective is to choose the optimal window size that yields the highest predictive accuracy, determined by subtracting the predictive error from the predictive value.

With some consideration, this could be efficiently implemented. By doing so, the window size can be recalculated each time a new sample is received, enabling it to adjust dynamically as time progresses.

Keep in mind that this method is nonparametric, which means that it doesn't merely replace one or more parameters with a window size parameter.

Window dragging is really laggy, this is an issue I've had for a while, but that i no longer tolerate. for a while now, dragging around any window in windows 10 takes a while to respond, ...

Tags: creating enumerating and sizing child windows

MoveWindow function (winuser.h)

Alters the size and placement of a designated window, with the coordinates and dimensions determined by whether it is a top-level or child window. In the former case, the values are measured from the top-left of the screen, while in the latter, they are measured from the top-left of the client area of parent window .

Syntax

```
BOOL MoveWindow(
  [in] HWND hWnd,
  [in] int  X,
  [in] int  Y,
  [in] int  nWidth,
  [in] int  nHeight,
  [in] BOOL bRepaint
);
```

Parameters

` [in] hWnd `

Type: **HWND**

A handle to the window.

` [in] X `

Type: **int**

The updated location of the window's left side.

` [in] Y `

Type: **int**

The updated location of the upper edge of the window.

` [in] nWidth `

Type: **int**

The new width of the window.

` [in] nHeight `

Type: **int**

The new height of the window.

` [in] bRepaint `

Type: **BOOL**

This parameter determines if the window should be painted or not. When set to TRUE, the window will receive a message, while setting it to FALSE will prevent any kind of repainting. This applies to all parts of the window, including the client area, the nonclient area (such as the title bar and scroll bars), and any uncovered areas of the parent window due to child window movement.

Return value

Type: **BOOL**

In case of success, a value other than zero is returned.

In case of a failed function, the return value would be zero. To access additional error details, invoke the GetLastError method.

Remarks

When the parameter bRepaint is set to TRUE , the WM_PAINT message is sent to the window procedure by the system right after the window has been moved using the MoveWindow function (i.e., the updatewindow function is called). However, if bRepaint is set to FALSE , the application is required to explicitly redraw or invalidate any parts of the window and its parent window that require redrawing.

The window receives several messages, including WM_WINDOWPOSCHANGING, WM_WINDOWPOSCHANGED, WM_MOVE, WM_NCCALCSIZE, and wm_size , when MoveWindow is executed.

Examples

To demonstrate, refer to the section on the creation, enumeration, and sizing of child windows.

Requirements

Client with the minimum support required	This applies exclusively to desktop applications and pertains specifical ly to Windows 2000 Professional.	
Minimum server requirements.	This specification is applicable to d esktop applications only and pertai ns to Windows 2000 Server.	
Platform Objective		Windows
	Header	winuser.h (include Wi ndows.h)
	Library	User32.lib
	DLL	User32.dll
	API set	This is ext-ms-win-ntuser-wi ndow-l1-1-1, which was first introduced in Windows 8.1.

Conceptual

Other Resources

Reference

SetWindowPos

UpdateWindow

WM_GETMINMAXINFO

WM_PAINT

Windows

Exploratory data analysis - How to determine moving, The motivation for a larger window size is decreased noise due to small sample size. This is the sample standar d deviation: standard_deviation ...

Moving window algorithm

Question:

Suppose there is an array consisting of a set of ` n ` integers that are randomly selected from the range of ` [x,y] ` .

In addition to that, my window is of a specific size, which is not as large as ` [x,y] ` , but still fixed, and it satisfies the condition stated in ` b-a < x-y ` .

Is there a viable algorithm that can be employed to ascertain if it is feasible to shift the window position from an arbitrary point, in such a manner that all components of ` m ` are encompassed within it?

Solution:

Would it be possible to determine if the `minimum` and `maximum` values fit within the `[a,b]` range by referencing the `m` array, instead of my current understanding of the `window` concept?

Alt-spacebar, M to move a window fails moving window, This means moving the top of the window up past the top of the screen. You can't do that moving the window with the mouse, but you can do it …

How to set a moving window

Question:

Hi everyone. I need help with a moving window creation: I'm analyzing behavioral data collected from rats and I need to create a moving window showing how their psycometric curves change through each session. I don't need help with the psycometric curves creation, but I really don't know how to set the loop to create a moving window with a window of 50 and a step of 1...

I need to do this with a LOOP, so I don't want to use any function (like movmean or conv for example)

I really hope you can help me because this is driving me crazy

Solution 1:

Why don't you want to use the built in function? Is it homework ?

What do you want to do for elements 1-49? Or the final 49 elements? Do you want the window to shrink as your window would leave the array? Do you just want those places where the window fits complete in your array? Did you just try a simple for loop:

```
ratData = rand(1, 500); % Sample data
windowWidth = 50;
averagedData = zeros(1, length(ratData) - windowWidth);
for k = 1 : length(ratData) - windowWidth
averagedData(k) = mean(ratData(k:k+windowWidth-1));
end
plot(ratData, 'b-' , 'LineWidth' , 2);
hold on ;
plot(averagedData, 'r-' , 'LineWidth' , 2);
grid on ;
legend( 'Actual' , 'Averaged' );
msgbox( 'Done!' );
```
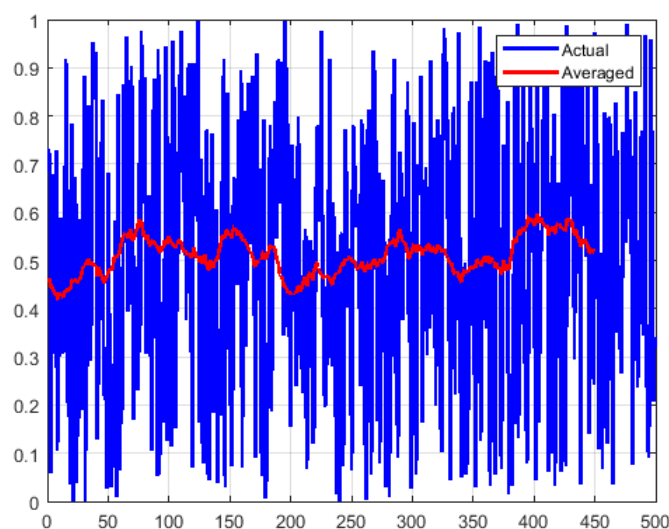
Solution 2:

Use the value of the for loop variable as the index of the first element in the window. Add a quantity to get the index of the last element in the window. Use linear indexing to extract the elements in the window.

x = (1:10).^2

x = 1×10

1 4 9 16 25 36 49 64 81 100

y = x(4:7) % [16 25 36 49]

y = 1×4

16 25 36 49

MoveWindow function (winuser.h), Remarks. If the bRepaint parameter is TRUE, the system sends the WM_PAINT message to the window procedure immediately after moving the ...

Read other technology post: How to spell all the months

Related posts:

Code example for moving a window from one monitor to another in Windows

Choosing the optimal window for computing rolling mean and standard deviation

Ineffective window movement with SetWindowPos() function?

Code example for creating a window in C using window.h

Creating a Win32 Window in C Programming Language

PCA Constraints in Dimensionality Reduction

Update Region of a Window for Children

Winuser.h: A Function for Creating Windows

Code example utilizing User32 API to obtain window width

A Modified Form of the Law of Large Numbers

Quick Typing Hacker Glancing Through Window

Code Sample Demonstrating the Functionality of Windows' Multiple Desktop Feature

Invalidating C++ void cwnd and removing bool berase 1

The Function GetSystemMetrics in winuser.h

Determining the Invocation Time of CWnd's Create Function

Machine Learning Cheat Sheet for Python's Scikit-Learn Library

Real-time Timeseries Data Analysis for Identifying Peak Signals

Derive a sinusoidal regression equation from a set of provided data

Cracking the Genetic Code: The Evolution of Matrix 4

Algorithm Using Monte Carlo Method to Check If a Permutation of 1 through n is Already Sorted

Is it possible to interchangeably use Prediction and Inference? [duplicate]

System.Int16 value cannot be assigned to property in entity framework error

Creating a Personalized Window Frame with DWM

Writing E(y) for the Expected Value of y: What is the Reason?

Inferring a random variable from multiple modes of measurement

Understanding the Efficacy of Fourier Analysis on Boolean Functions

Selecting an appropriate unsupervised machine learning model for my task

Significance of Mean, Median, and Mode

Tight margin of error

Plotting the Empirical Mean Excess of MEM

Write a comment:

Your name

Title

Message

Please login to Send

Search

Search

Search

Related questions

How to prevent a window from moving?
In the Snap section of Step 2, you have the option to arrange windows by dragging them to different sides or corners of the screen. Additionally, you can choose to automatically size a window to fill available space when snapped, and have the option to show what can be snapped next to it. Another feature allows for simultaneous resizing of any adjacent snapped window when one is resized.

How to move a window that is off-screen?
To relocate a Window that has gone off-screen on your Windows 10 PC, you can use two methods. Firstly, hold down Alt+Space-bar and press the M key, then release all the keys. Alternatively, hold Shift down and right-click on the program's icon in the taskbar. From the options, select Move. You will notice your mouse cursor transform into a 4-way arrow that will move to the window's title bar. After that, utilize your keyboard's arrow keys to move the window as desired. Finally, when you have moved the window to its new position, right-click your mouse to complete the process.

How do I move window in Windows 10?
To move a program window in Windows, press Shift and right-click on its icon located on the taskbar, then choose Move, and select the left or right arrow until the window shows up. Alternatively, you can change the screen resolution or long-press the Windows key while pressing an arrow to select the app. If you are using a Mac, you can change the screen resolution, force the app to relaunch, or utilize the Zoom feature.

How to move window with keyboard?
To move a window, either click on it or use the keyboard shortcut Alt + Tab to make it active. Then, press Alt + Spacebar to access a small menu and select the Move option by pressing M. The mouse cursor will turn into a cross with arrows and move to the title bar of the window. Finally, press Enter to exit the process.

Latest posts

[Adding default JVM arguments using Gradle: A guide](https://copyprogramming.com)

[Retrieving the Current Operating System Version on Linux Using Command Line](https://copyprogramming.com)

[Python code for selecting random numbers between 1 and 50](https://copyprogramming.com)

[Pandas DataFrame: Grouping and Printing the Entire Dataset](https://copyprogramming.com)

[Locating the Installation Path of Java on Windows 10](https://copyprogramming.com)

[Redirecting from a Function in React JS: A Guide](https://copyprogramming.com)

[Creating a new Flutter project using the command prompt](https://copyprogramming.com)

[Axios multipart/form-data for uploading images](https://copyprogramming.com)

[Compilation failure in create-react-app due to Eslint error](https://copyprogramming.com)

[Error in TypeScript: Implicit 'any' type for element due to index expression not being of type 'number' when converting string to enum](https://copyprogramming.com)

TensorFlow Tutorials

[Solving the 'import tensorflow keras models could not be resolved' Error: A Comprehensive Guide](https://copyprogramming.com)

[How to Resolve "module 'tensorflow' has no attribute 'app'" Error in Tensorflow](https://copyprogramming.com)

Does TensorFlow Automatically Use GPU? The Truth Behind Optimizing Performance

How to Boost Your Deep Learning Performance with TensorFlow GPU Acceleration: The Ultimate Guide

From NumPy to TensorFlow: A Comprehensive Guide to Converting Arrays to Tensors

Fixing ModuleNotFoundError: No module named 'TensorFlow' in Jupyter Notebook

Unleashing the Power of TensorFlow: How GPUs Optimize Performance

Activate TensorFlow in Anaconda: A Comprehensive Guide for Deep Learning Enthusiasts

How to Save and Load Trained Models in TensorFlow: A Comprehensive Guide

Boosting Autoencoder Performance: Adding Fully Connected Layers to the Encoder

Artificial Intelligence

Artificial Intelligence

What's artificial intelligence?

Importance of Artificial Intelligence

What is artificial intelligence?

How Artificial Intelligence Works?

Uses of Artificial Intelligence

How Artificial Intelligence And Natural Intelligence Works

How long has artificial intelligence ai existed

Why is artificial intelligence ai gaining importance

Problem Solving in Artificial Intelligence

New tutorials

Insert a string into other string at the specified position or after X paragraphs of a HTML content in PHP

Create gradient text with Tailwind CSS

Sticky Header, Footer and Fixed Sidebar with Tailwind CSS

How to Install Tailwind CSS in a Laravel Project

How to install Laravel?

Popular PHP Frameworks in 2022

4 tips to solve programming issues

How to Enable Remote Access To MySQL Database Server?

Install MySQL 8.0 on Ubuntu 20.04

New command "model:show" in Laravel 9

Recommended posts

[Determining the nearest hundred approximation of the number 35](#)

[Generating subdirectories within directories based on file presence](#)

[Excluding NA values, determine the average of a column in R](#)

[Is 5/8 greater than 3/5?](#)

[Viewing My LinkedIn Posts: A Guide](#)

[Alter the Color of Tables on Google Docs: A Guide](#)

[Expected 1, but Too Many Values Caused ValueError: Too Many Values to Unpack](#)

[Proving the identity of a square and parallelogram](#)

[Phone system for small businesses featuring on-hold music](#)

[Identification of an organization's purpose incorporated in a mission statement](#)

[Maximum vertical displacement of a ball launched vertically upwards](#)

[Maximum Amperage Output of a Car Battery](#)

[Where can I purchase arrows in Breath of the Wild?](#)

[Disk's volume data is missing](#)

[Establishing a One-to-Many Connection in Microsoft Access](#)

[Communication failure between Dcom and the computer](#)

[Exploring the Limitations of SATA Device Cable Length](#)

[Discovering the Method for Identifying the Absolute Maximum and Minimum in Multivariable Equations](#)

[Assign a value of 0 to each element in an array](#)

[Identify the Most Acidic Compound from the Given Options](#)

[Positioning for Delivering a Straight Bowling Ball](#)

[Understanding Link Embedding: Its Significance](#)

[Enhance page loading speed with predictive service](#)

[Unauthorized User Attempting to Assume IAM Role](#)

[Emphasizing Justice in the Study of Moral Behavior](#)

[Decoding the Meaning of 'Nth' in Text Messaging](#)

[Continuing to experience a sense of self-depletion](#)

[The Process of Retrieving File Fragments is Known as _____](#)

[Eliminating Video Blur on Android: A Guide](#)

[Electromagnetic principle is the basis for the operation of DC generators](#)

[About us](#)　　　[Terms of Service](#)　　　[Privacy](#)　　　[Contact](#)