A Useful MA Weighting Function For Controlling Lag & Smoothness

alexgrover WIZARD Nov 2, 2020

Trend Analysis Moving Averages smooth lag sma gradient

53 3491

So far the most widely used moving average with an adjustable weighting function is the Arnaud Legoux moving average (ALMA), who uses a Gaussian function as weighting function. Adjustable weighting functions are useful since they allow us to control characteristics of the moving average such as lag and smoothness.

The following moving average has a simple adjustable weighting function that allows the user to have control over the lag and smoothness of the moving average, we will see that it can also be used to get both an SMA and WMA .

A high-resolution gradient is also used to color the moving average, makes it fun to watch, the plot transition between 200 colors, would be tedious to make but everything was made possible using a custom R script, I only needed to copy and paste the R console output in the Pine editor.

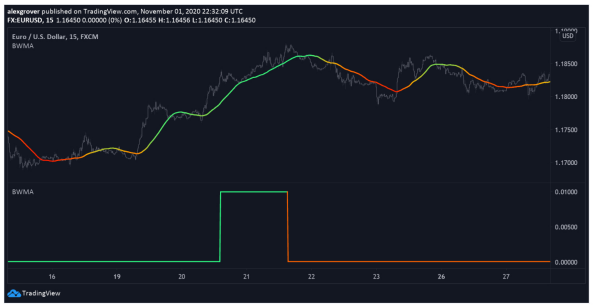
Settings

- length : Period of the moving average
- -Lag : Setting decreasing the lag of the moving average
- +Lag : Setting increasing the lag of the moving average

Estimating Existing Moving Averages

The weighting function of this moving average is derived from the calculation of the beta distribution, advantages of such distribution is that unlike a lot of PDF , the beta distribution is defined within a specific range of values (0,1). Parameters *alpha* and *beta* controls the shape of the distribution, with alpha introducing negative skewness and beta introducing positive skewness, while higher values of *alpha* and *beta* increase kurtosis .

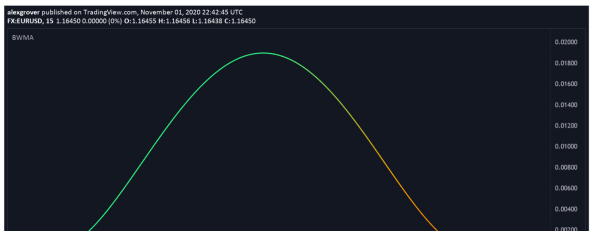
Here *-Lag* is directly associated to *beta* while *+Lag* is associated with *alpha*. When *alpha = beta = 1* the distribution is uniform, and as such can be used to compute a simple moving average .



Moving average with *-Lag = +Lag = 1*, its impulse response is shown below.

It is also possible to get a WMA by increasing *-Lag*, thus having *-Lag = 2* and *+Lag = 1*.

Using values of *-Lag* and *+Lag* equal to each other allows us to get a symmetrical impulse response, increasing these two values controls the heaviness of the tails of the impulse response.



Here *-Lag = +Lag = 3*, note that when the impulse response of a moving average is symmetrical its lag is equal to *(length-1)/2*.

As for the gradient, the color is determined by the value of an RSI using the moving average as input.

I don't promise anything but I will try to respond to your comments

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You can also check out some of the indicators I made for luxalgo : https://www.tradingview.com/u/LuxAlgo/#published-scripts

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Open-source script

In true TradingView spirit, the author of this script has published it open-source, so traders can understand and verify it. Cheers to the author! You may use it for free, but reuse of this code in a publication is governed by House Rules. You can favorite it to use it on a chart.

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```
// This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License https://creativecommons.org/licenses/by-sa/4.0/
//@version=4
study("A Useful MA Weighting Function For Controlling Lag & Smoothness","BWMA",true)
length = input(50)
beta   = input(3.,"-Lag",minval=1,maxval=10)
alpha  = input(3.,"+Lag",minval=1,maxval=10)
src    = input(close)
//----
var b = array.new_float(0)
var css = array.new_color(na)
if barstate.isfirst
    for i = 0 to length-1
        x = i/(length-1)
        w = pow(x,alpha-1)*pow(1-x,beta-1)
        array.push(b,w)
    array.push(css,#FF1100), array.push(css,#FF1200), array.push(css,#FF1400), array.push(css,#FF1500), array.push(css,#FF1700), array.push(css,#FF1800), array.push(css,#FF1A00), array.push(cs
den = array.sum(b)
//----
sum = 0.
for i = 0 to length-1
    sum := sum + src[i]*array.get(b,i)
filt = sum/den
//----
os = rsi(filt,length)/100
plot(filt,"Plot",array.get(css,round(os*199)),2)
```

Comments

Leave a comment that is helpful or encouraging. Let's master the markets together

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PineCoders MOD · Dec 28, 2020

500 coins

+10 Reply

PineCoders MOD · Nov 20, 2020

This publication is now featured in our Editors' Picks. In the name of all TradingView traders, thank you for your valuable contribution to the TradingView community, and congrats!

+23 Reply

dpanday · Nov 2, 2020

Nice!

+12 Reply

Pratik_4Clover · Nov 2, 2020

As usual, great work and thanks!!

+8 Reply

fikira PREMIUM · Nov 2, 2020

Beautiful!

+5 Reply

dgtrd WIZARD · Nov 2, 2020

beautiful !!!

+4 Reply

stevenwalter0 PRO · Nov 2, 2020

We are always thankful and happy to see another Grover script, especially one utilizing the array function. This makes a solid 2 line cross system, from what I see so far.

+3 Reply

Duyck WIZARD · Nov 2, 2020

Very usefull, beautifull and valuable script, Alex!
Thx.

Gr, JD.

+3 Reply

yatrader2 PREMIUM · Nov 2, 2020

@alexgrover is at it again with interesting an novel work! THANK YOU!

+3 Reply

onemason PREMIUM · Dec 23, 2020

I'm struggling to find the indicator. Is there a name in the search field that will allow me to find it easier?

+2 Reply

alexgrover WIZARD · Dec 23, 2020

@onemason, You can add it to your favorites, then you can apply it to your chart from the favorites section in "indicators & strategies"

+1 Reply

onemason PREMIUM · Dec 23, 2020

@alexgrover, thank you :)

Reply

shubhamkasture · Jun 10 · TradingView for Android

@alexgrover, great

Reply

CrackerJack235 · Dec 8, 2020

Alex, can this indicator be modified into a strategy for backtesting? Can buy/sell signals be developed based upon the color of the indicator? Please advise. Thanks looks terrific!!

+2 Reply

alexgrover WIZARD · Dec 23, 2020

@CrackerJack235, yep, will see if I make a strategy out of it

+2 Reply

CrackerJack235 · Dec 26, 2020

@alexgrover, Thanks...I'd like to help out if you are interested?? Let me know!!

Reply

DDMyke PREMIUM · Nov 21, 2020

Love it!

+2 Reply

UnknownUnicorn1412320 · Nov 13, 2020

Awesome! Thank you.

+2 Reply

KasimKundum · Nov 8, 2020

Muhteşem...

+2 Reply

Spikegld · Nov 5, 2020

As lag is my enemy this trend indicator is my friend!

+2 Reply

Time_Out_2021 · Feb 5, 2021

Thank you for creating and publishing this script
Its awesome !!!
The coolest thing since sliced bread :)

Thank you for being who you are and doing what you do giving golden ideas to newbs like me :)
I love playing around with scripts this one has a very visible improvement to most other indicators !!!

+1 Reply

alexgrover WIZARD · Feb 5, 2021

@Sneaker_Wave, thx a lot for the kind words :)

+1 Reply

Time_Out_2021 · Feb 5, 2021

@alexgrover, Your a Legend to me Thank you for all of the Time you have spend creating your publications ... a like and a comment is hardly worth the quality you provide :)
Take care friend !!!

+1 Reply

furkanmeric PRO · Jan 12, 2021

thank u, this is awesome. I usally use for a 5 or 15 min on dax and gold for forex .

+1 Reply

Piticu · Jan 11, 2021

Hello mate, first of all this is my favourite MA from all, I love the colours and with lag_+ settings on 1 is same as ()sma, but I spotted an issue with this and maybe you could fix this, I wanted to make an strategy with your MA, all good but when I go to reply mode for testing my strategy gets this error :
" Index 0 is out of bounds, array size is 0"", and strategy not working of course but what is weired that Ma is not being displayed, on study mode and replay there is no issue and gets displayed.
I can understand why
Thanks

+1 Reply

alexgrover WIZARD · Feb 5, 2021

@Piticu, Thx for the kind words make sure you copied the code correctly, it could be related to the colors.

Reply

Piticu · Feb 5, 2021

@alexgrover, Great to see you active mate, yes code was correct copied but whole strategy is not working in replay mode if this code is used/ integrated .I gave up a while ago as couldn`t figure out why strategy stop working in replay mode , fully working in strategy just on replay getting this error, sorry for early confusion .Thanks

Reply

DankBeans · Jan 3, 2021

Adding this one to my collection, excellent work Alex. 😊

+1 Reply

OxTiabeanie · Jan 1, 2021

Nice to see something new, thanks !

+1 Reply

foxnomics · Dec 17, 2020

Lovely. Going to see if I can make alerts based on the color gradient

+1 Reply

alexgrover WIZARD · Dec 23, 2020

@foxnomics, if you apply a rsi to the indicator you might be able to do it

+1 Reply

JustJamesB · Dec 16, 2020

How do I add alerts on this?

+1 Reply

alexgrover WIZARD · Feb 5, 2021

@JustJamesB, see tradingview.com/support/solutions/43000520149-about-tradingview-alerts/

Reply

jeno_ PREMIUM · Dec 9, 2020

Hi great stuff! How can I make MTF out of it?

+1 Reply

DaniBraRio · Dec 1, 2020

Hello nice work!! I see that it is applied to Forex. Can we apply it to Crypto?

+1 Reply

alexgrover WIZARD · Dec 1, 2020

@DaniBraRio, Yep sure :)

+1 Reply

NickkK_BE · Nov 30, 2020

Amazing work (again) ;)
Is it possible to change color transparency ?

+1 Reply

alexgrover WIZARD · Dec 1, 2020

@NickkK_BE, Will see if I add a transparency setting :)

Reply

stilllearning PREMIUM · Nov 29, 2020

Wow, really? Amazing work man! That gradient is next level.

+1 Reply

Dr_Khaos PREMIUM · Nov 27, 2020

Beautiful! This is a work of art. Can anybody help me understand how to take just the color coding from this and apply it to a simple EMAs?

+1 Reply

ProKingTV PREMIUM · Nov 27, 2020

there is a weighted MA

+1 Reply

ibrohim7755 · Nov 25, 2020

Is this created by python??????

+1 Reply

alexgrover WIZARD · Nov 29, 2020

@ibrohim7755, Hi, no, in Pinescript :) The color codes for the gradient was made using R, but can be done using python for sure.

+1 Reply

MrThomas · Nov 24, 2020

nice

+1 Reply

Woerle · Nov 24, 2020

Interesting work ! Are you providing it also for Easy Language / Tradestation?

+1 Reply

alexgrover WIZARD · Nov 24, 2020

@Woerle, No, the script is only available on tradingview.

Reply

KasimKundum · Nov 8, 2020

GREAT...

+1 Reply

ICEKI PREMIUM · Nov 8, 2020

Hello Alex; I haven't seeing you post some great Indicator recently.

This MA look so beautiful and useful; great work mate!
Keep it up and Stay Safe in your place; best wish <3

+1 Reply

longterminvesment PRO · Nov 3, 2020

Thank you so much Sir Alex

+1 Reply

bayseferogullari · Mar 27

thanks

Reply

vrjdkr PRO+ · Jan 5

How did you plot the probability density functions in a separate pane? Would be useful for understanding the weightings.

Reply

arviman PRO+ · Apr 11, 2021

This is beautiful. Definitely adding this study as an indicator. I like this over Ehler's insta trend just because of it's simplicity.

Reply

RajeevNaik PREMIUM · Feb 16, 2021

Thanks for the most responsive MA on TV.

Reply

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