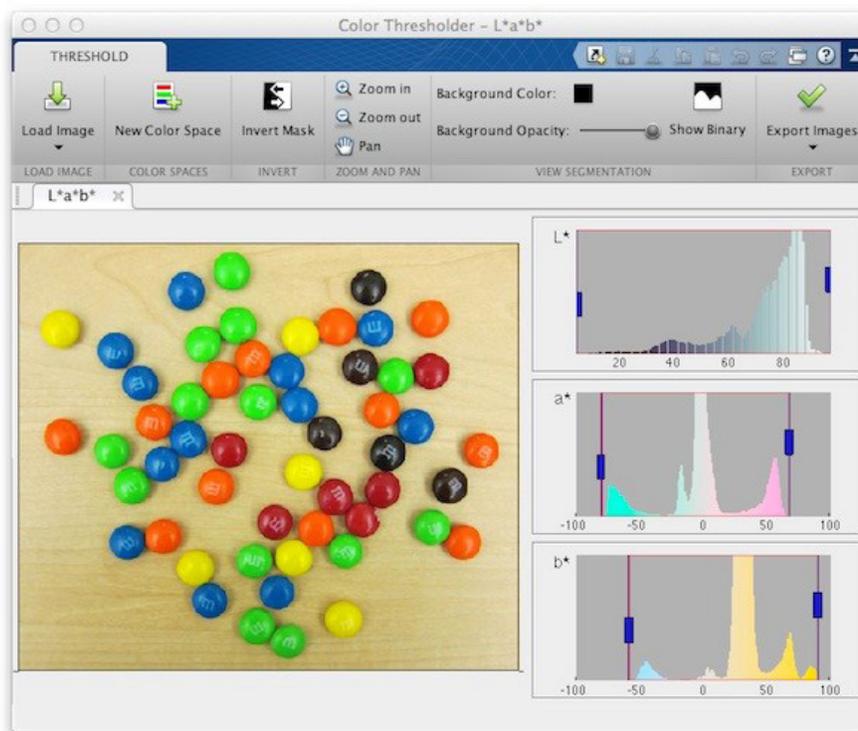


# The Color Thresholder App

Excerpted from the [Steve on Image Processing](#) blog.

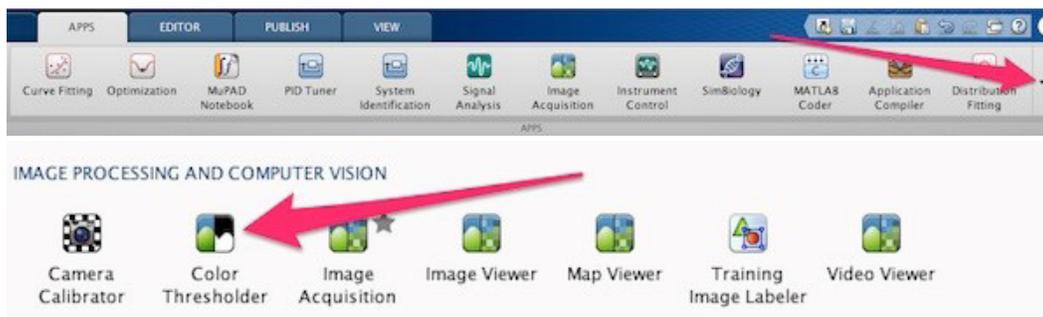
I had way too much fun this morning playing with the Color Thresholder app in Image Processing Toolbox™, so I wanted to show it to you.



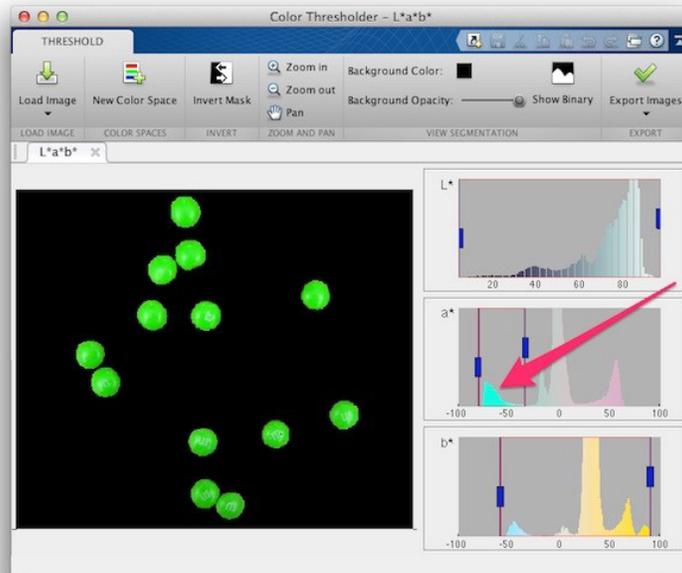
I've shown that picture of M&Ms in this blog before. A few years ago I used that image in a [post about color segmentation in the  \$a^\*\$ - \$b^\*\$  space](#). Here's the original image:



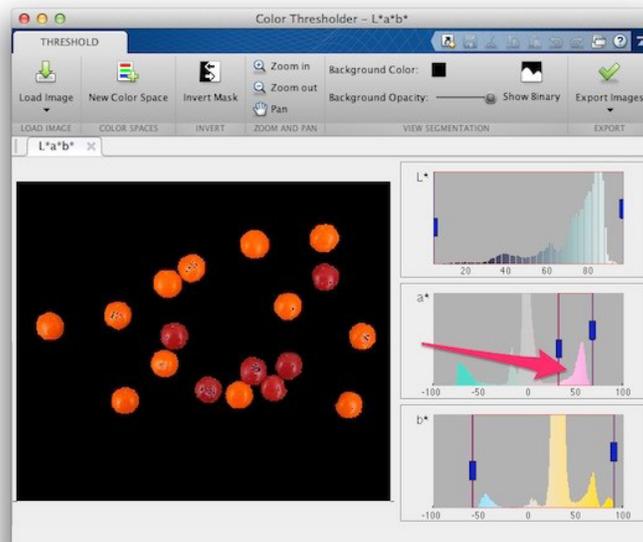
You can find the Color Thresholder app by clicking on the Apps tab in MATLAB®.



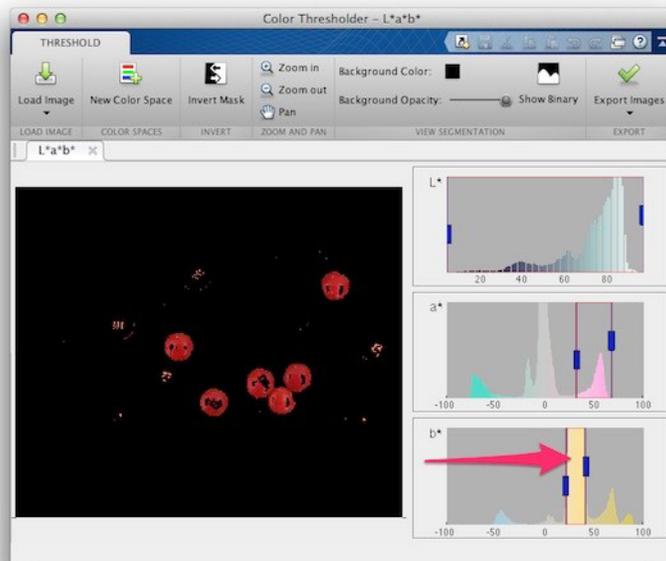
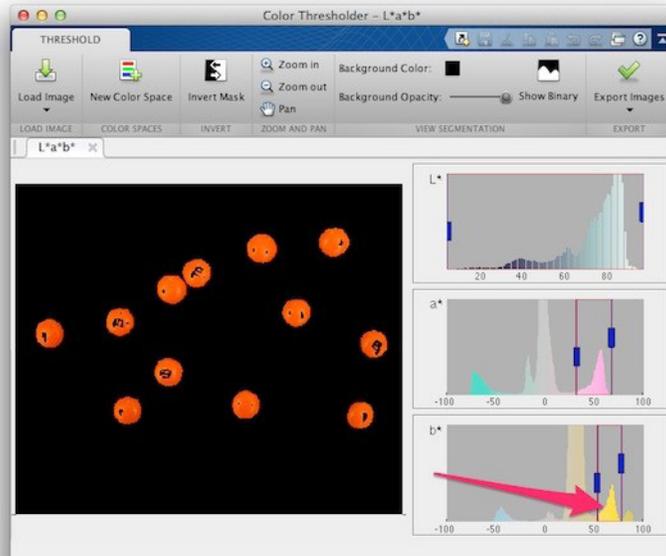
I found the Color Thresholder to be a fun way to explore the  $a^*$  coordinate (green to red/magenta) and the  $b^*$  coordinate (blue to yellow) in the  $L^*a^*b^*$  color space. Some of the M&Ms have colors that can be segmented completely using just one of the color coordinates. Below I have segmented the green ones by selecting one of the peaks in the  $a^*$  coordinate.



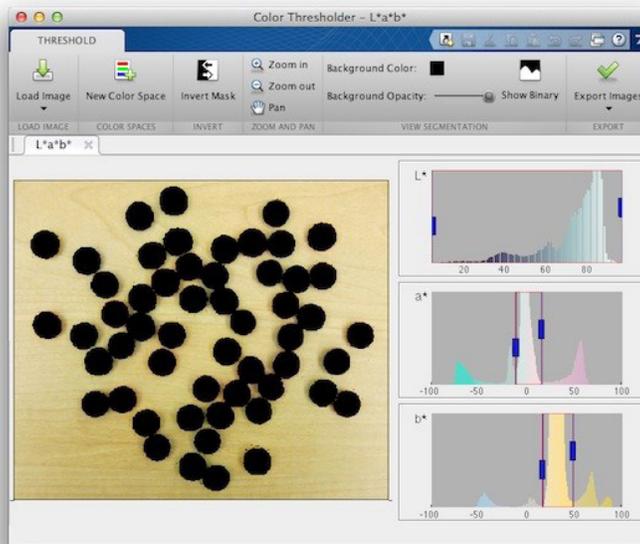
But sometimes it is necessary to use both the  $a^*$  and  $b^*$  coordinates. The screen shot below demonstrates that one of the  $a^*$  peaks corresponds to two different candy colors, orange and red.



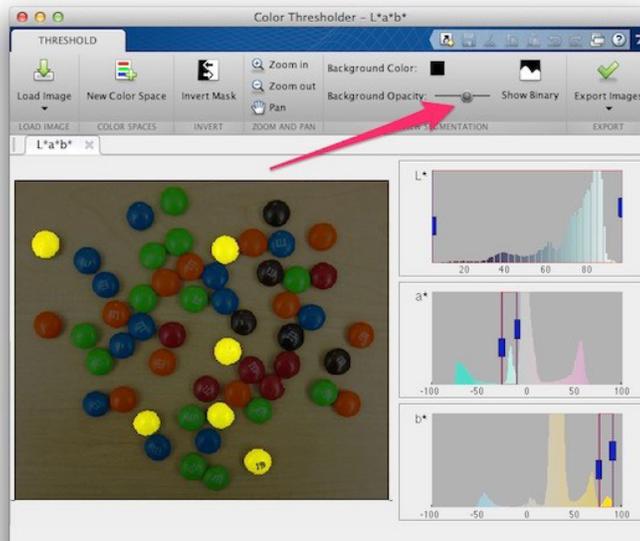
To get either orange or red, you have to narrow down the range in the  $b^*$  coordinate.



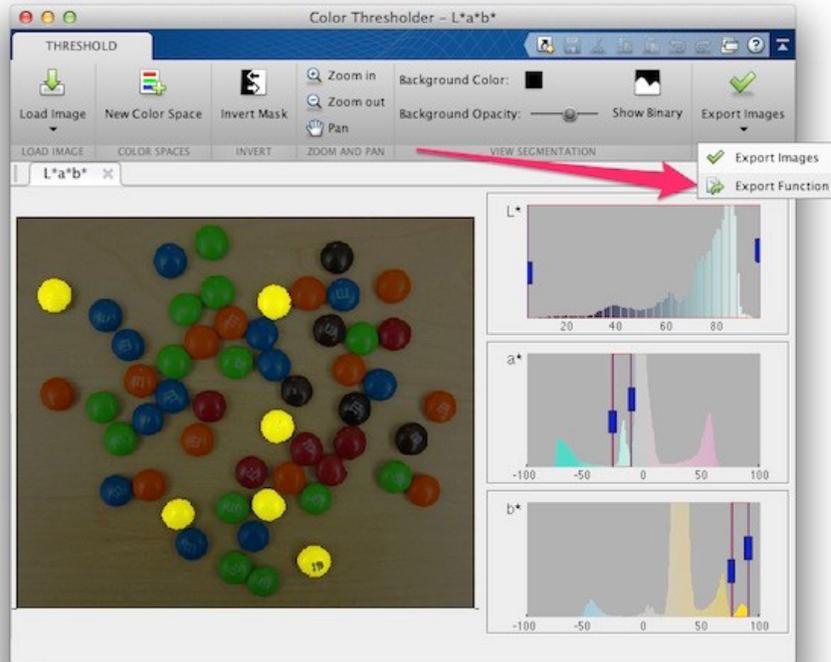
It turns out the color of my desk is different from all of the candy colors.



You can use the opacity slider to let some of the rest of the image show through.



If you want to automate the segmentation process, the Color Thresholder app can help you get started by generating some code for you.



```
function [BW,maskedRGBImage] = createMask(RGB)
%
% Auto-generated by colorThresholder app on 01-Apr-2016
%-----

% Convert RGB image to chosen color space
RGB = im2double(RGB);
cform = makecform('srgb2lab', 'AdaptedWhitePoint', whitepoint('D65'));
I = applycform(RGB,cform);

% Define thresholds for channel 1 based on histogram settings
channel1Min = 4.238;
channel1Max = 96.916;
```

```

% Define thresholds for channel 2 based on histogram settings
channel2Min = -26.887;
channel2Max = -10.332;

% Define thresholds for channel 3 based on histogram settings
channel3Min = 75.402;
channel3Max = 89.556;

% Create mask based on chosen histogram thresholds
BW = (I(:,:,1) >= channel1Min ) & (I(:,:,1) <= channel1Max) & ...
      (I(:,:,2) >= channel2Min ) & (I(:,:,2) <= channel2Max) & ...
      (I(:,:,3) >= channel3Min ) & (I(:,:,3) <= channel3Max);

% Initialize output masked image based on input image.
maskedRGBImage = RGB;

% Set background pixels where BW is false to zero.
maskedRGBImage(repmat(~BW,[1 1 3])) = 0;

```

### Learn More About Image Processing

- [MATLAB and Simulink Unmanned Vehicle Systems: Buoy Detection Using Simulink](#) 47:45
- [Buoy Detection Using Simulink](#) (download)
- [SegmentTool: An Interactive GUI for Segmenting Images](#) (download)
- [Segment Images Interactively and Generate MATLAB Code](#) (download)
- [The Warholer](#) (download)
- [New Features for High-Performance Image Processing in MATLAB](#) (technical article)
- [The Watershed Transform: Strategies for Image Segmentation](#) (technical article)
- [Tracking Objects: Acquiring And Analyzing Image Sequences In MATLAB](#) (technical article)
- [Image Processing Toolbox](#) (product trial)