

Function Document

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Following is the help document of count_lego:

```
>> help count_lego
```

```
% This function counts blue 2*4 legos and red 2*2 legos.
% [Version: MATLAB R2019b]
%
% Parameters:
%   OUTPUT:
%       numA = the number of blue 2*4 lego.
%       numB = the number of red 2*2 lego.
%   INPUT:
%       I1 = RGB image.
%
% Methods:
%   At first, hsv information is used to select objects in certain color.
%   Then, the function detects how many circles can be found in a single
%   lego and determine if it is a target lego or not. In this step, two
%   circle detection methods are combined to keep the stability and
%   efficiency. When determining legos, complex judging conditions are
%   used in order to suit possible different situations (like several same
%   color legos close to each other). For increasing speed and accuracy,
%   this function also considers if the outline of the detecting object
%   is convex or not. Finally, the number of blue 2*4 and red 2*2 legos
%   can be counted.
%
% Procedures:
%   Color segment based on HSV information --> Detect edge --> Count
%   circles in each region and determine whether it is a target lego
%   --> Count target legos
%
% Example:
%   example.m
%
% Reference:
%   https://uk.mathworks.com/help/images/ref/regionprops.html
%   https://uk.mathworks.com/help/images/detect-and-measure-circular-objects-in-an-image.html
```