**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]

%

% Paraments:

% 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