

Segment coins from a background

% Step 1: Read an Image

```
close all           % clear the MATLAB workspace of any variables.
clear all          % close all windows.
I = imread('coins.png'); % read a sample image into an 2D array named I.
```

% Step 2: Display it

```
imshow(I);         % display image I .
imtool(I);         % provides access to other tools for exploring images.
```

% Step 3: Apply Image Processing Methods

```
bw = im2bw(I,0.4); % convert a grayscale image into a binary image using
                  % threshold value ? (between 0 – 1).

figure, imshow(bw); % precede the call to imshow with the figure command so the
                  % results are displayed in a new window.

bw2 = imfill(bw, 'holes'); % fills holes in the binary image bw.

figure, imshow(bw2); % precede the call to imshow with the figure command so the
                  % results are displayed in a new window.
```

% Step 4: Find all the connected components (objects).

```
[L, num] = bwlabel(bw2, 8); % returns a matrix L, of the same size as bw ,containing labels
                            % for the connected objects in bw2 and the number of
                            % connected objects in num.

RGB = label2rgb(L); % converts a label matrix L into an RGB color image for the
                  % purpose of visualizing the labeled regions.
```

```
figure, imshow(RGB);
```

% Step 5: Remove small coins

```
S = regionprops(L); % it measures a set of properties for each labelled region in the label
                  % matrix L.

idx = find([S.Area] > 2000); % find regions whose area is greater than 2000 pixels.

bw3 = ismember(L, idx); % remove small objects, under 2000 pixels.

figure, imshow(bw3);
```