7 Identify the Blue Colored Object in Cluttered Image

Read the image

```
image = imread('peacock.jpg');
```

```
Warning: Function filter has the same name as a MATLAB built-in. We suggest you rename the function to avo
Warning: Function filter has the same name as a MATLAB built-in. We suggest you rename the function
to avoid a potential name conflict.
```

Convert the image from RGB to HSV color space

```
hsvImage = rgb2hsv(image);
```

Define thresholds for 'Hue', 'Saturation' and 'Value' to isolate blue color

```
hueThresholdLow = 0.55; % Adjust these values based on your image
hueThresholdHigh = 0.75;
saturationThresholdLow = 0.4;
saturationThresholdHigh = 1.0;
valueThresholdLow = 0.2;
valueThresholdHigh = 1.0;
```

Create a binary mask based on the thresholds

```
blueMask = (hsvImage(:,:,1) >= hueThresholdLow) & (hsvImage(:,:,1) <=
hueThresholdHigh) & ...
           (hsvImage(:,:,2) >= saturationThresholdLow) & (hsvImage(:,:,2) <=
saturationThresholdHigh) & ...
           (hsvImage(:,:,3) >= valueThresholdLow) & (hsvImage(:,:,3) <=
valueThresholdHigh);
```

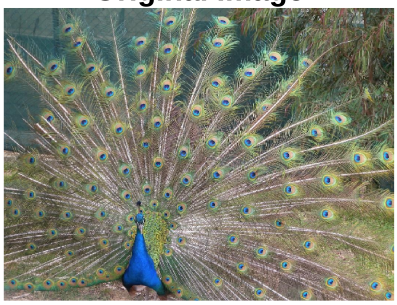
Apply the mask to the original image

```
blueObjects = bsxfun(@times, image, cast(blueMask, 'like', image));
```

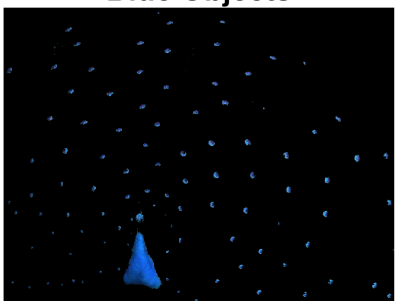
Display the original image and the blue objects

```
figure;
subplot(1, 2, 1);
imshow(image);
title('Original Image');
subplot(1, 2, 2);
imshow(blueObjects);
title('Blue Objects');
```

Original Image



Blue Objects



Optionally, you can use morphological operations to clean up the mask

```
blueMask = imopen(blueMask, strel('disk', 5)); % Remove small objects
blueMask = imclose(blueMask, strel('disk', 5)); % Fill small holes
```

Display the cleaned mask

```
figure;
imshow(blueMask);
title('Cleaned Blue Mask');
```

Cleaned Blue Mask