```
clc
close all
warning off

% Create a webcam object
cam = webcam;

% Open a figure window for visualization
figure;

% Infinite loop for real-time color sensing
while true
    % Capture a frame from the webcam
    frame = snapshot(cam);

    % Display the current frame
    imshow(frame);
    title('Color Sensing Robot');

    % Define the target color (in this example, it's red)
    targetColor = [255, 0, 0]; % RGB values for red
    %Red: [255, 0, 0]
    %Green: [0, 255, 0]
    %Blue: [0, 0, 255]
    %Yellow: [255, 255, 0]
    %Cyan: [0, 255, 255]
    %Magenta: [255, 0, 255]
    %White: [255, 255, 255]
    %Black: [0, 0, 0]

    % Extract the red channel from the image
    redChannel = frame(:,:,1);

    % Calculate the mean intensity of the red channel
    meanIntensity = mean(redChannel(:));

    % Set a threshold for color detection
    threshold = 100;

    % Check if the mean intensity exceeds the threshold
    if meanIntensity > threshold
        disp('Target color detected! ');
        % Implement the robot's action here (e.g., move forward)
    else
        disp('Target color not detected.');
        % Implement the robot's action for when the color is not detected
    end

    % Pause for a short duration to simulate real-time operation
    pause(0.1);
```

```
end
```

```
Target color not detected.
Target color not detected.
Target color not detected.
Target color not detected.
Target color not detected.
Target color not detected.
Target color not detected.
Target color not detected.
Target color detected!
Target color detected!
Target color detected!
Target color detected!
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Target color detected!
Target color detected!
Target color detected!
```

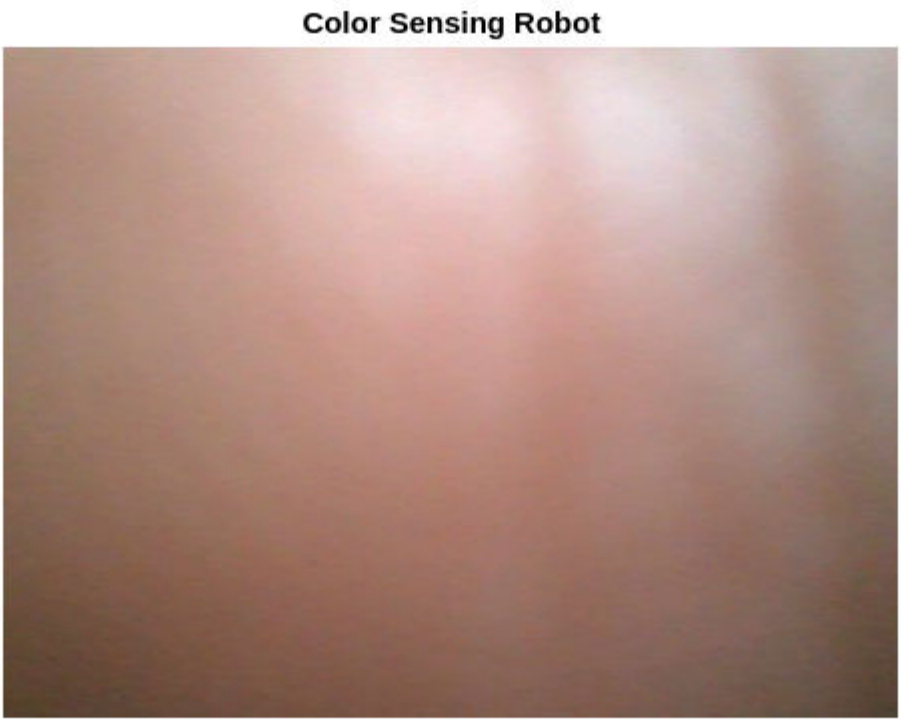


```
% Close the webcam object
clear cam;
```