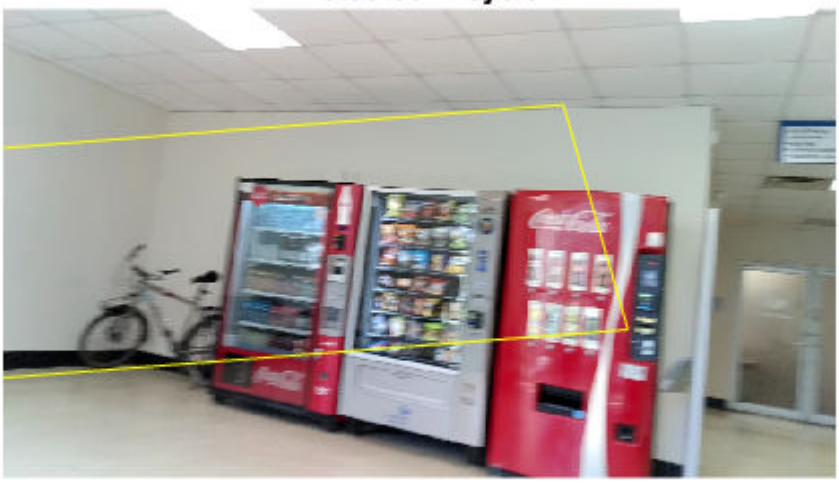
```
% Load the template image
bicycleImage = imread('./cropped_frames/bicycle.jpg');
grayBicycleImage = rgb2gray(bicycleImage);
bicyclePoints = detectSURFFeatures(grayBicycleImage);
[bicycleFeatures, bicyclePoints] = extractFeatures(grayBicycleImage,
bicyclePoints);

% Display the bicycle image with the 100 strongest feature points
figure;
imshow(grayBicycleImage);
hold on;
title('100 Strongest Features from Bicycle Image');
plot(selectStrongest(bicyclePoints, 100), 'showOrientation', true);
hold off;
```

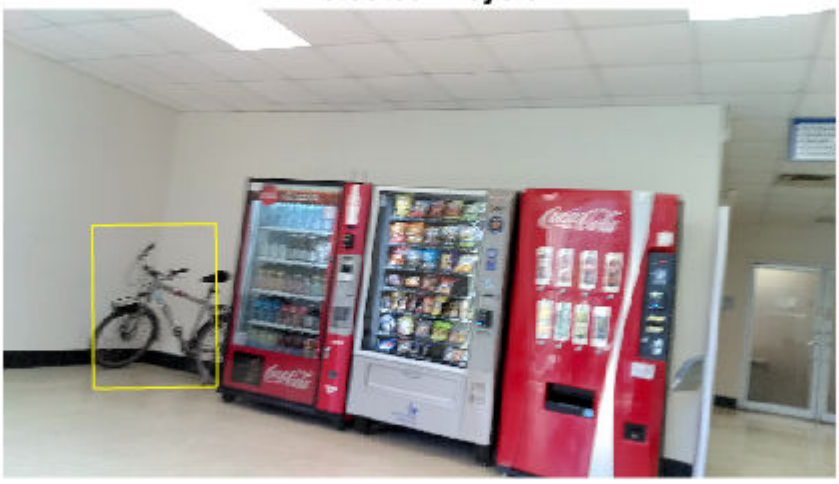

```
folderPath = 'frames';
files = dir(fullfile(folderPath, '*.jpg'));
numFiles = length(files);

% Loop through each image in the folder
for k = 1:numFiles
    framePath = fullfile(folderPath, files(k).name);
    sceneImage = imread(framePath);
    graySceneImage = rgb2gray(sceneImage);

    scenePoints = detectSURFFeatures(graySceneImage);
```

```
    [sceneFeatures, scenePoints] = extractFeatures(graySceneImage,
scenePoints);

    pairs = matchFeatures(bicycleFeatures, sceneFeatures);

    matchedBicyclePoints = bicyclePoints(pairs(:, 1), :);
    matchedScenePoints = scenePoints(pairs(:, 2), :);

    try
        [tform, inlierIdx] =
estimateGeometricTransform2D(matchedBicyclePoints, matchedScenePoints,
'affine');
        inlierBoxPoints = matchedBicyclePoints(inlierIdx, :);
        inlierScenePoints = matchedScenePoints(inlierIdx, :);

        objPolygon = [1, 1; size(grayBicycleImage, 2),
1; size(grayBicycleImage, 2), size(grayBicycleImage, 1); 1,
size(grayBicycleImage, 1); 1, 1];
        newBoxPolygon = transformPointsForward(tform, objPolygon);

        figure;
        imshow(sceneImage);
        hold on;
        line(newBoxPolygon(:, 1), newBoxPolygon(:, 2), 'Color', 'y');
        title('Detected Bicycle');
        drawnow;
    catch ME
        disp(['Failed to process frame ', num2str(k), ': ', ME.message]);
    end
end
```

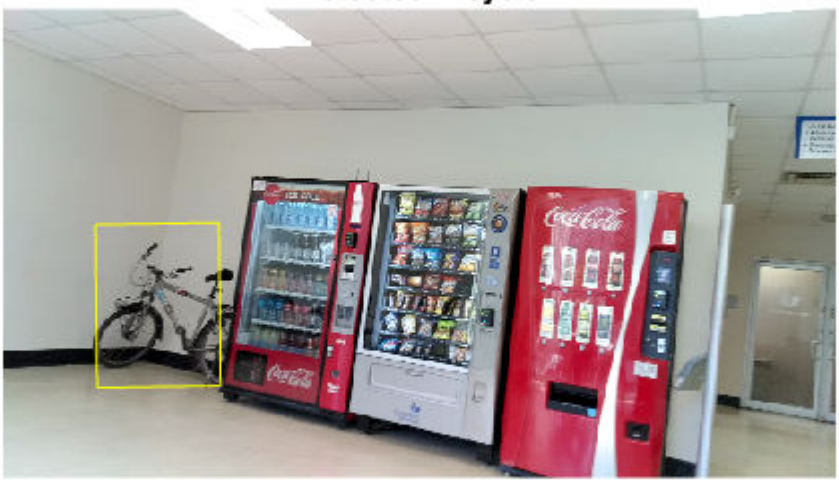
Detected Bicycle



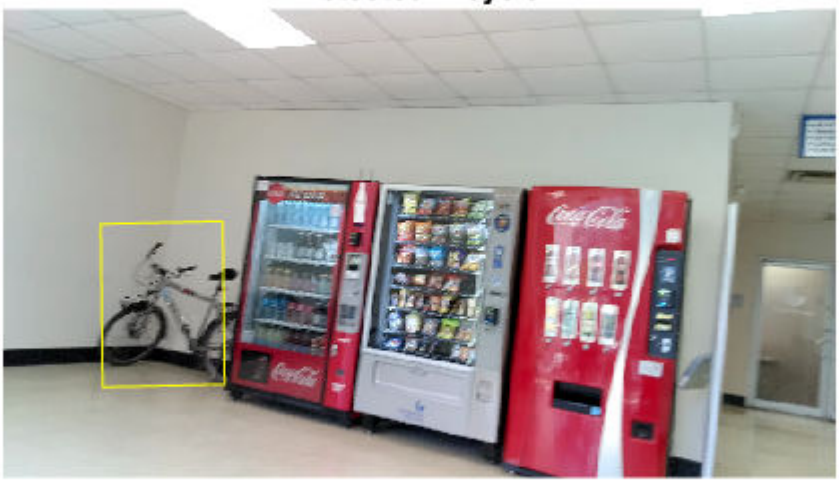
Detected Bicycle



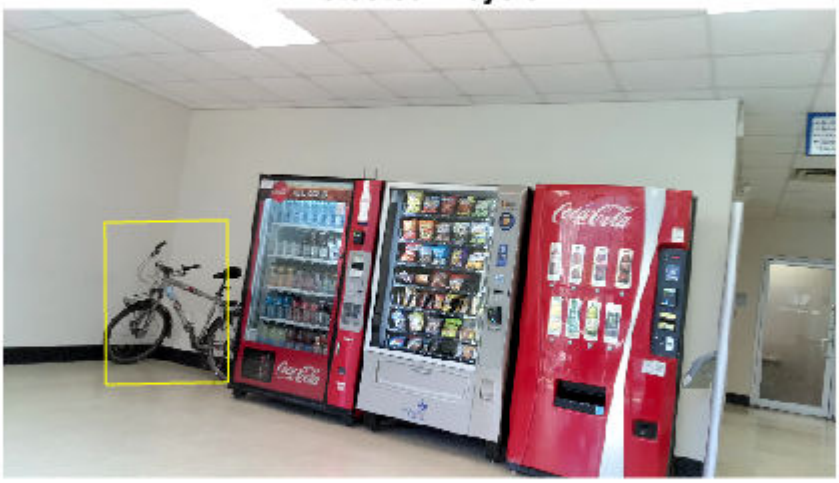
Detected Bicycle



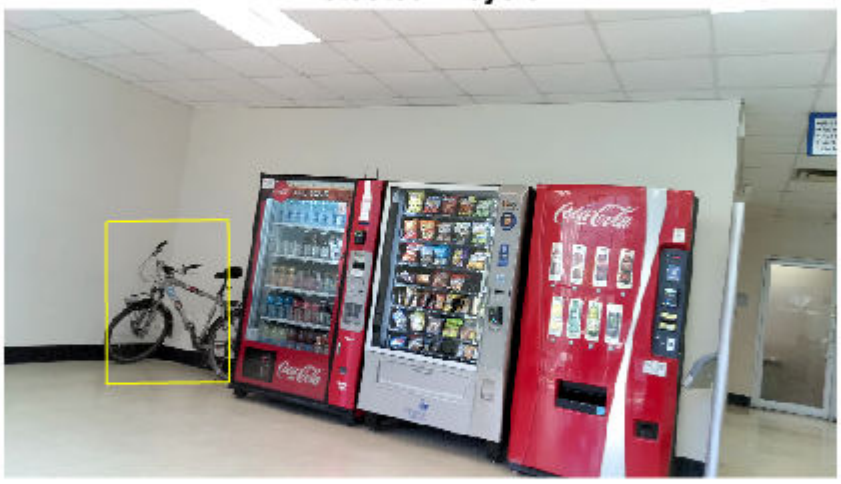
Detected Bicycle



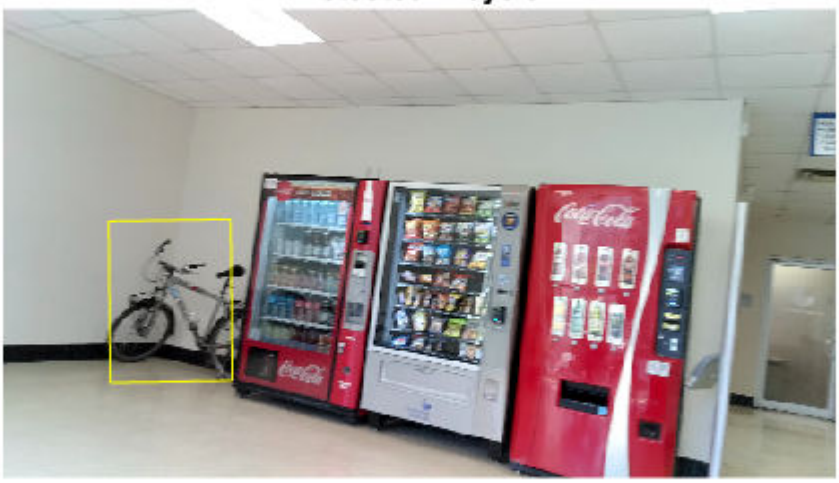
Detected Bicycle



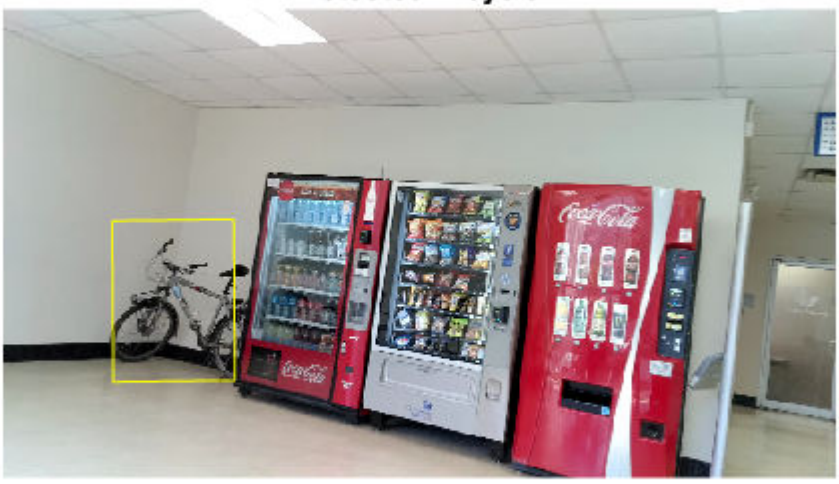
Detected Bicycle



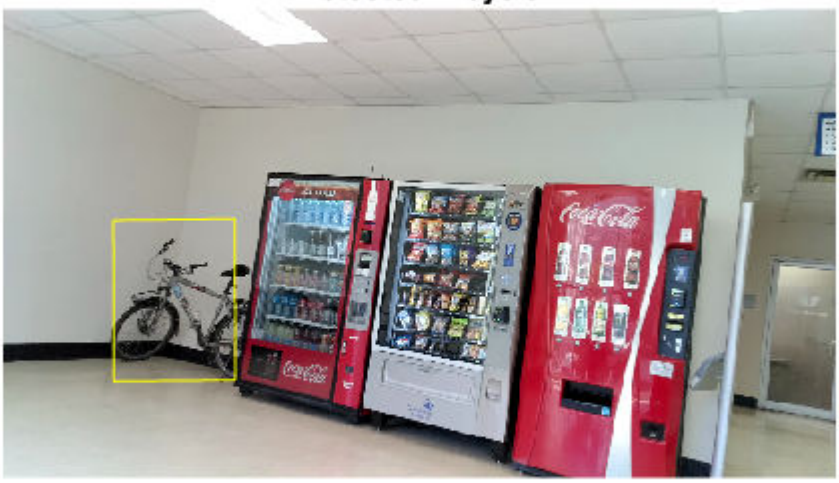
Detected Bicycle



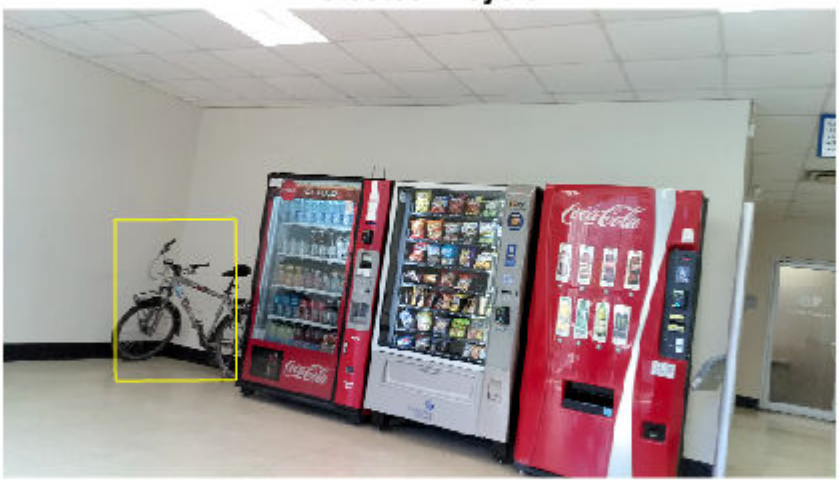
Detected Bicycle



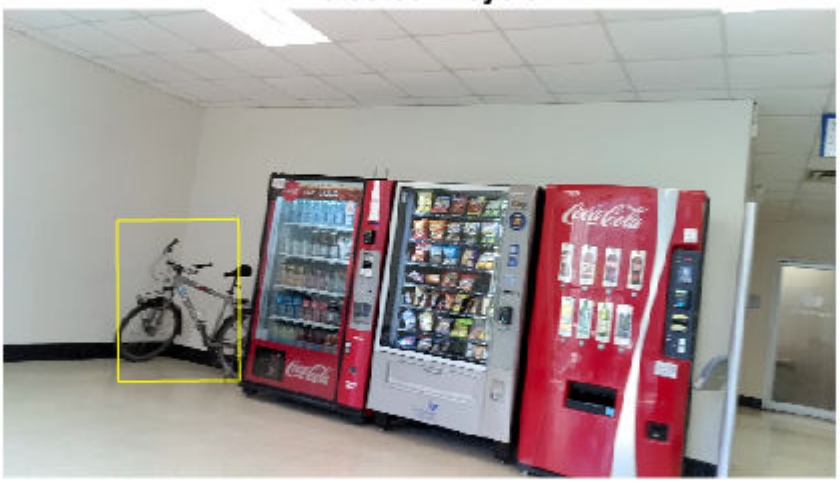
Detected Bicycle



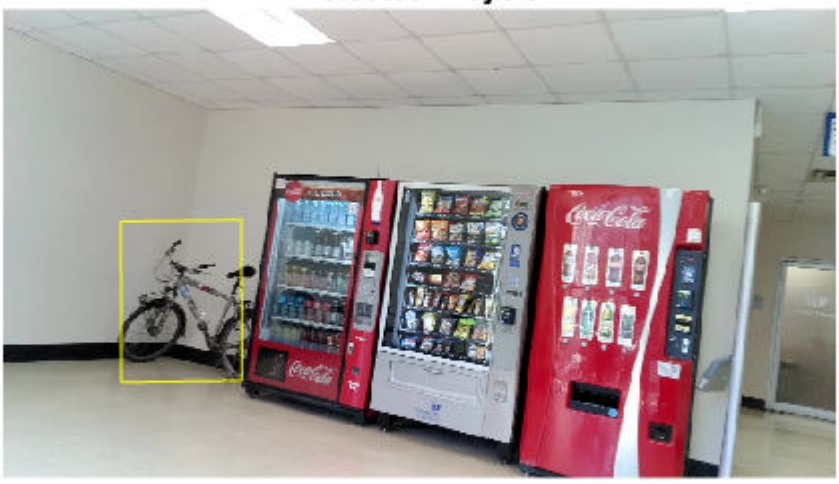
Detected Bicycle



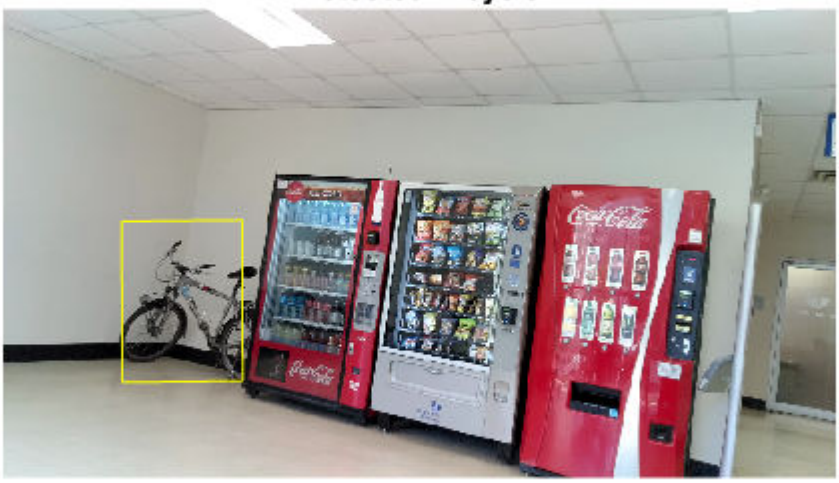
Detected Bicycle



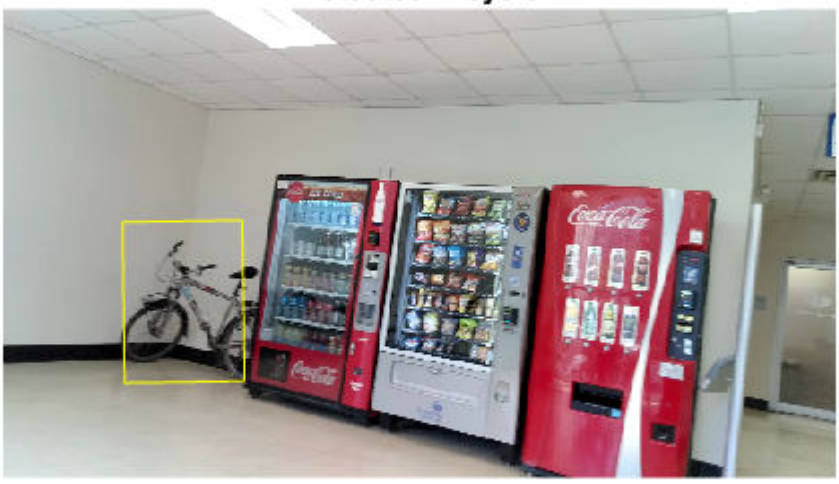
Detected Bicycle



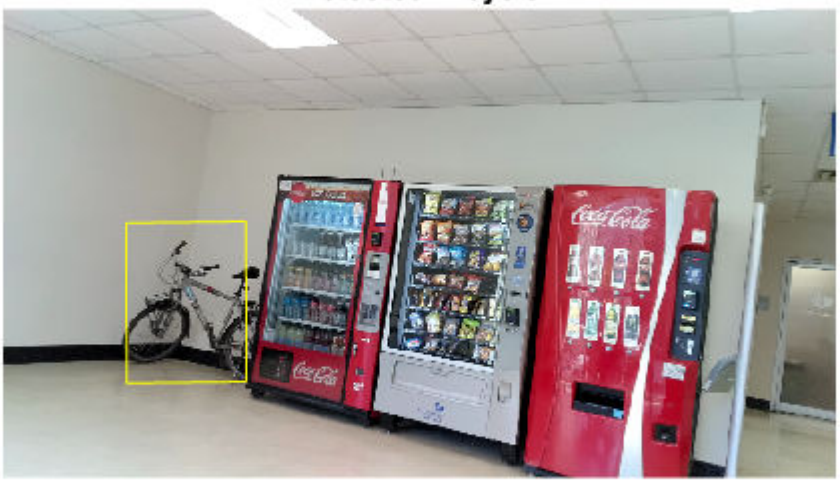
Detected Bicycle



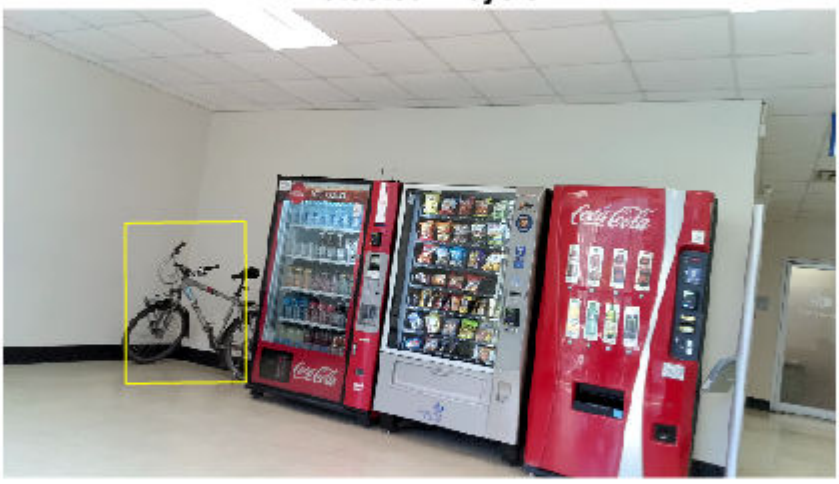
Detected Bicycle



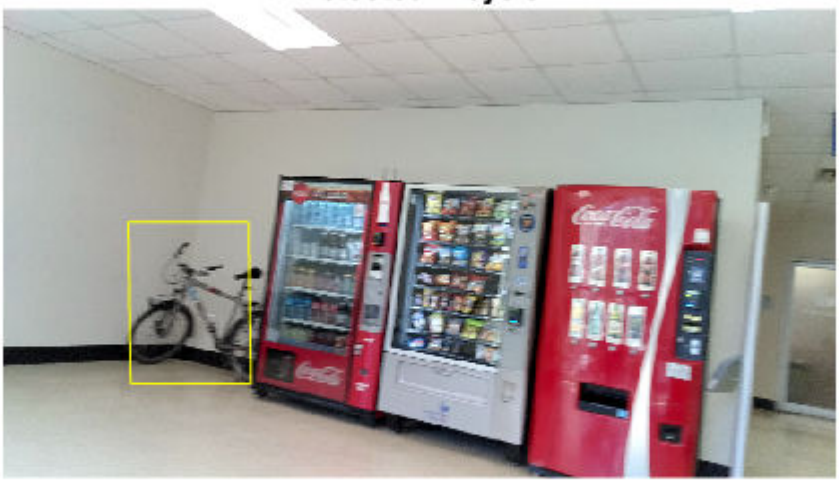
Detected Bicycle



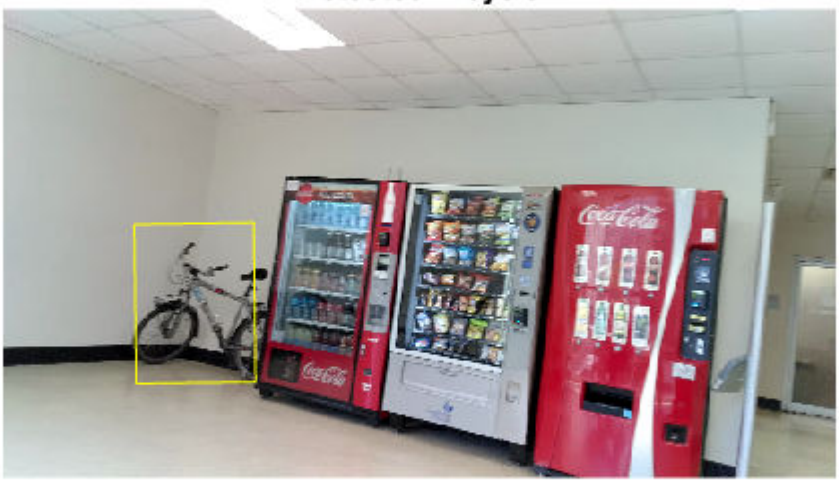
Detected Bicycle



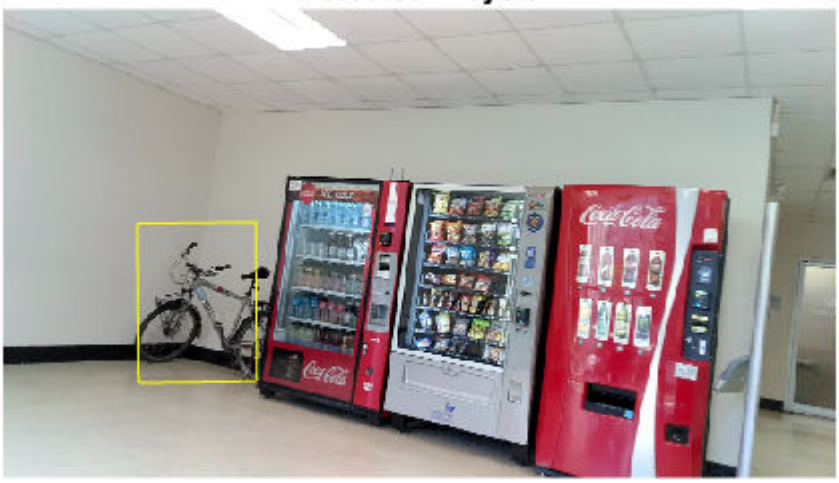
Detected Bicycle



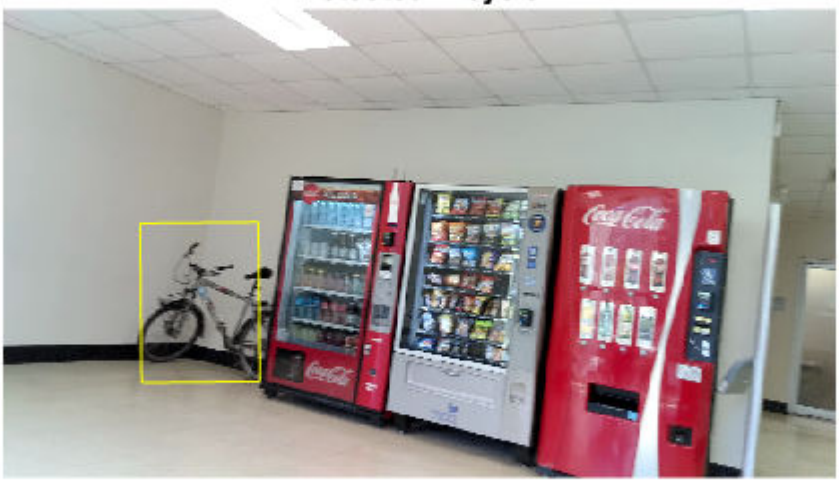
Detected Bicycle



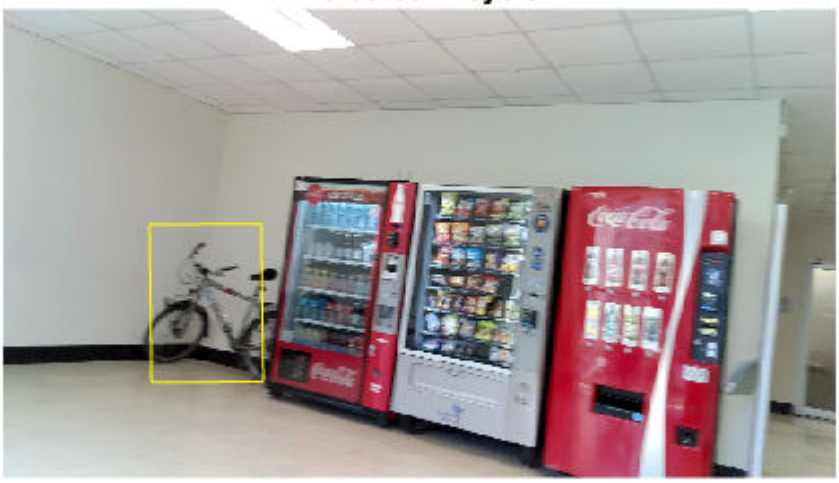
Detected Bicycle



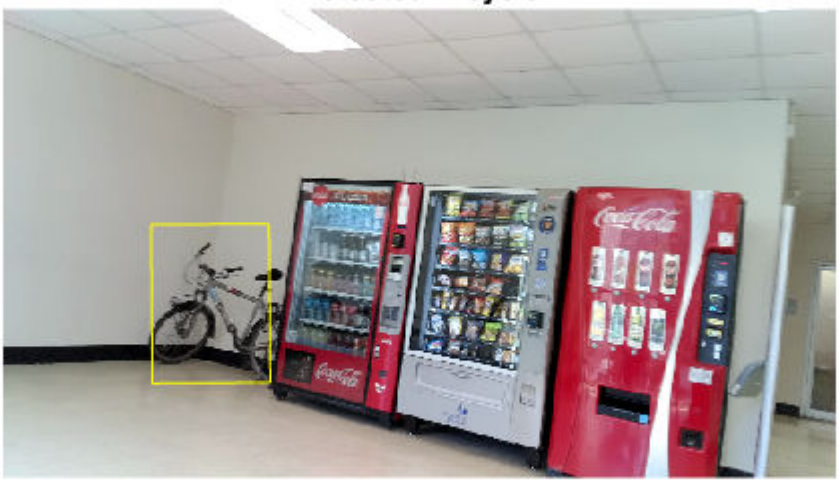
Detected Bicycle



Detected Bicycle



Detected Bicycle



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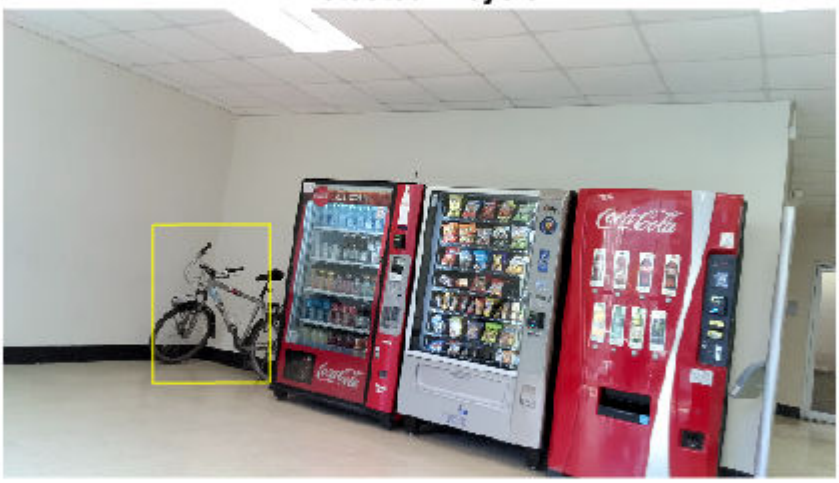
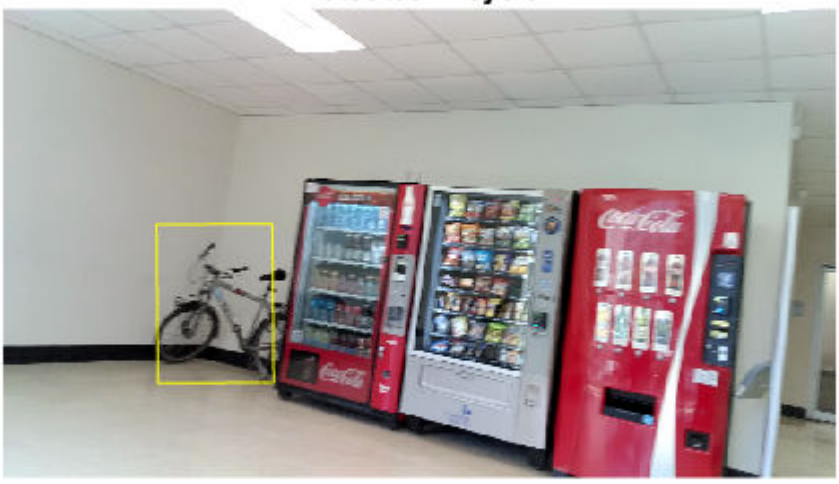
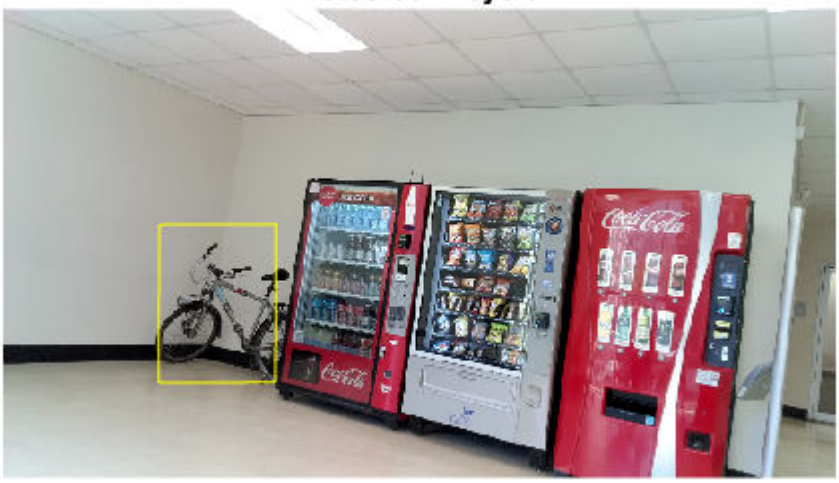


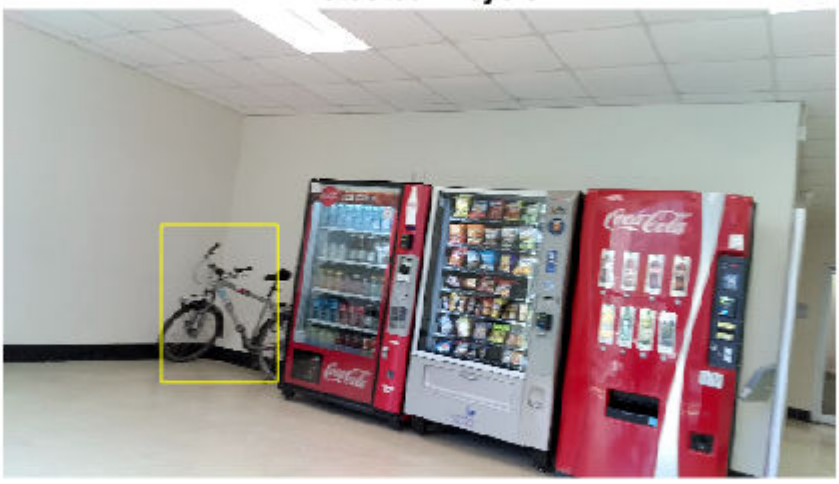
Detected Bicycle



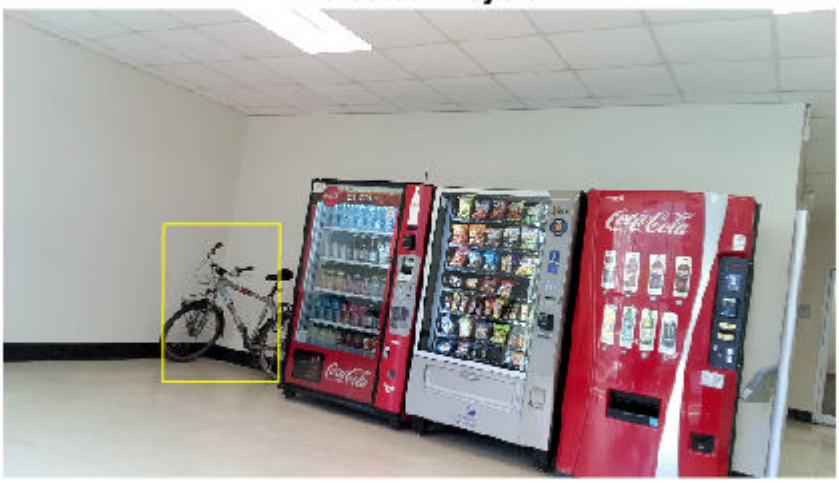
Detected Bicycle



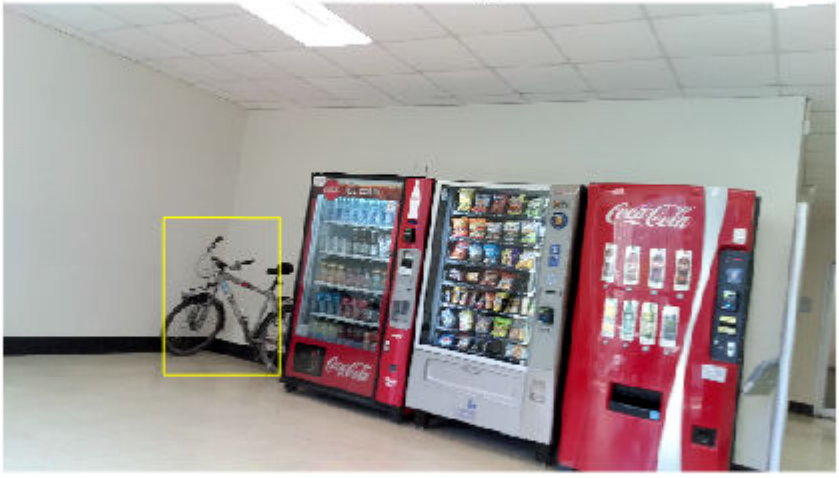
Detected Bicycle



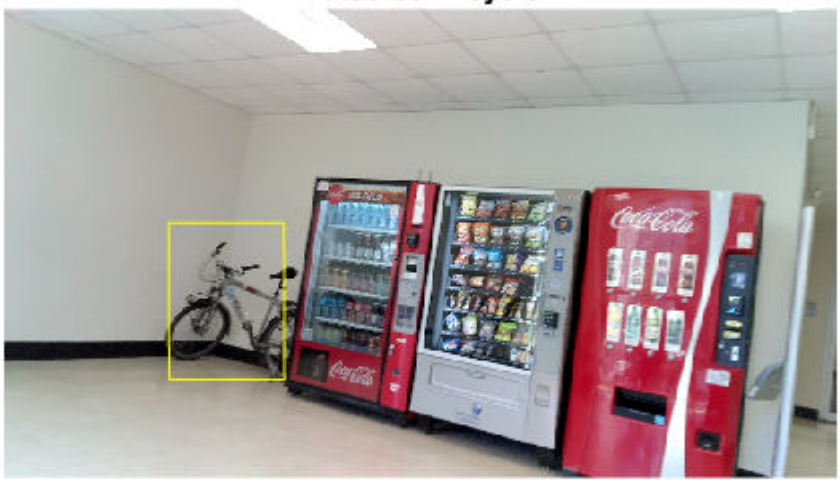
Detected Bicycle



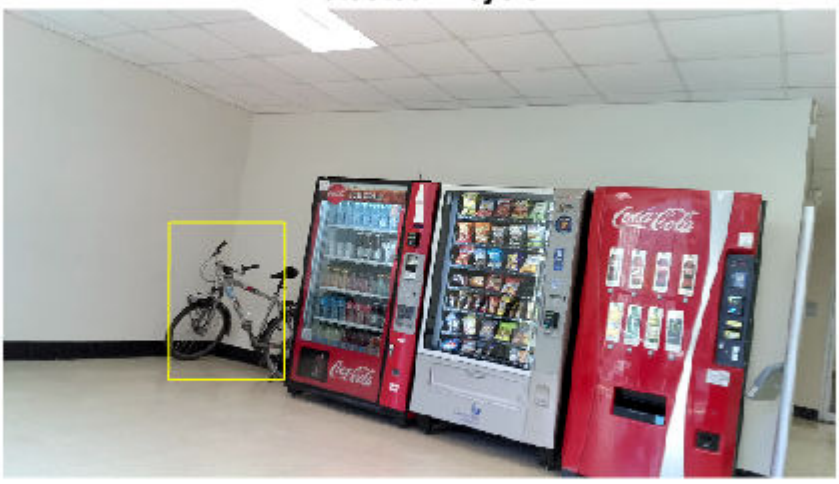
Detected Bicycle



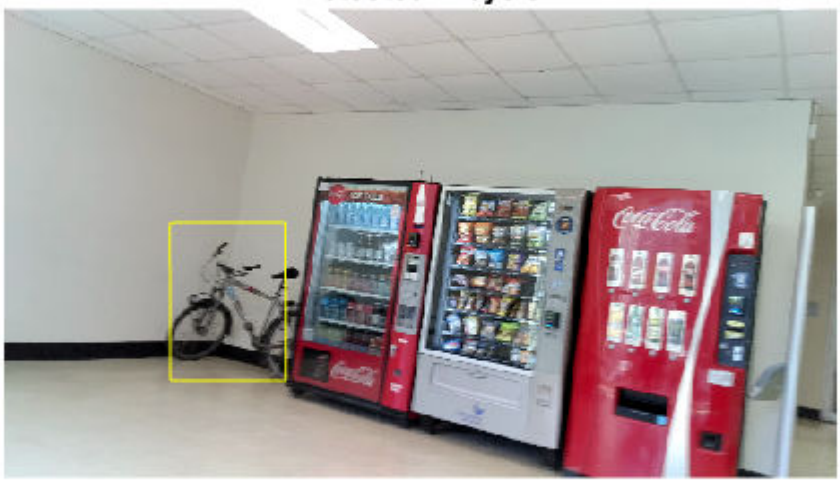
Detected Bicycle



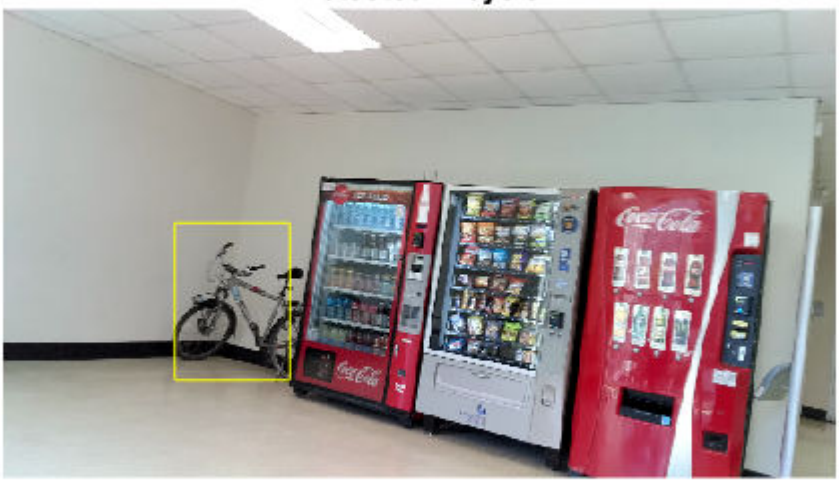
Detected Bicycle



Detected Bicycle

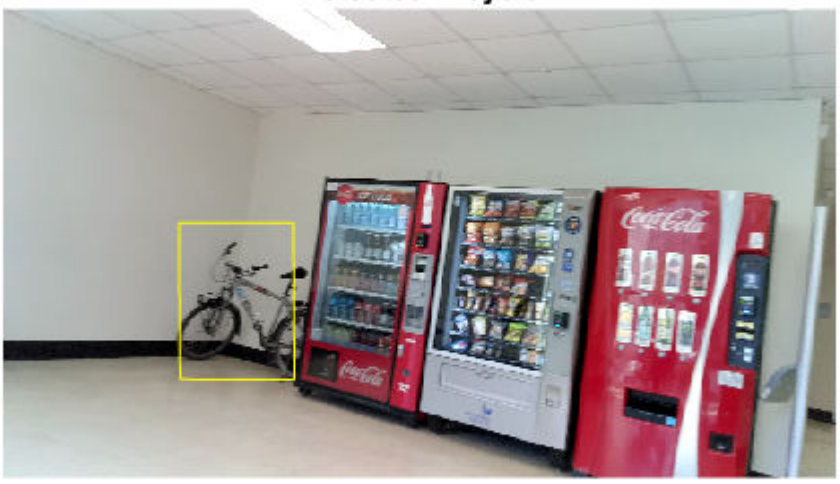


Detected Bicycle

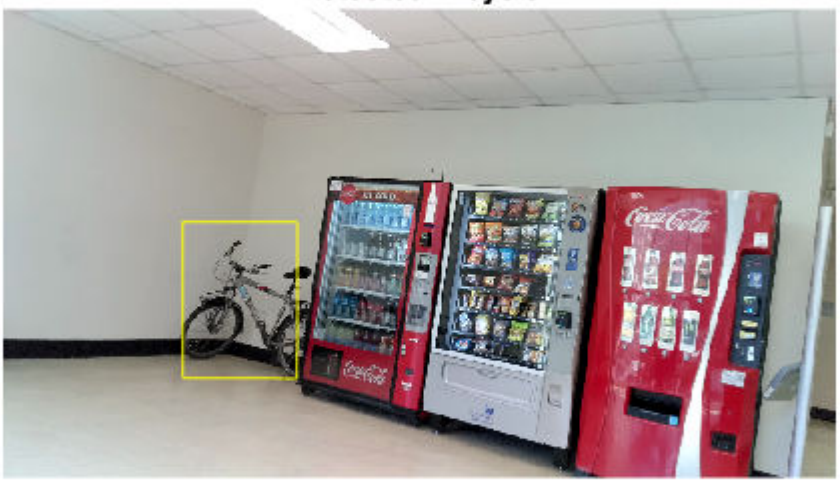


Detected Bicycle

Detected Bicycle

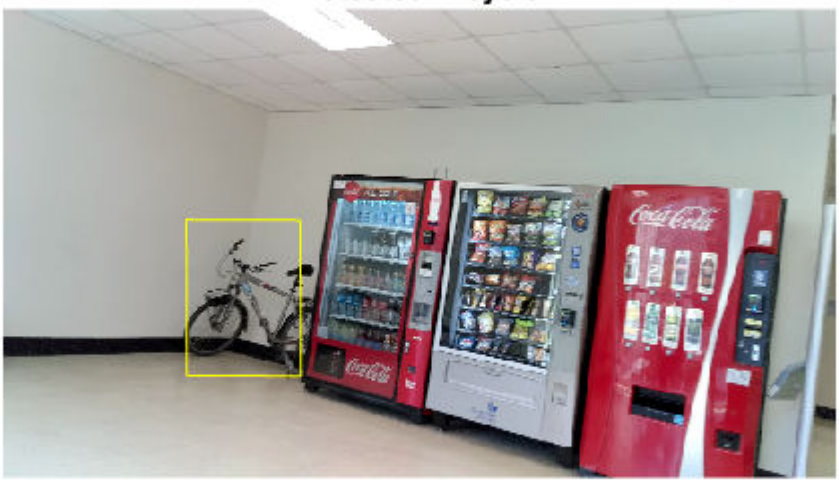


Detected Bicycle

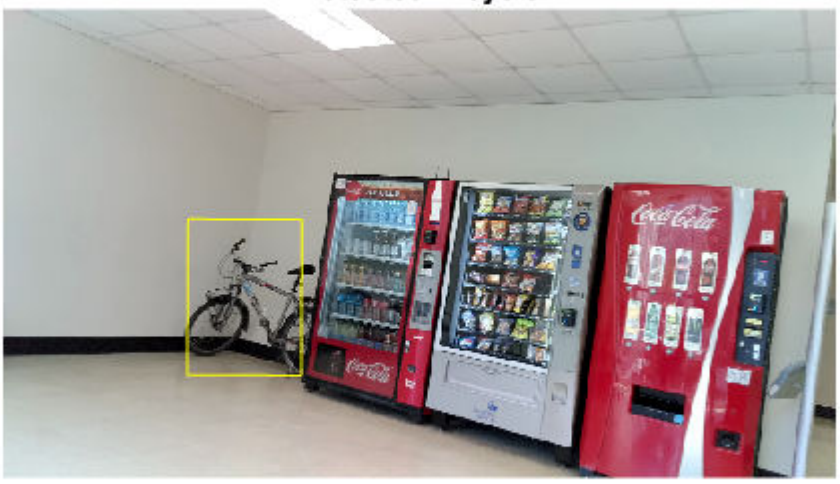


Detected Bicycle

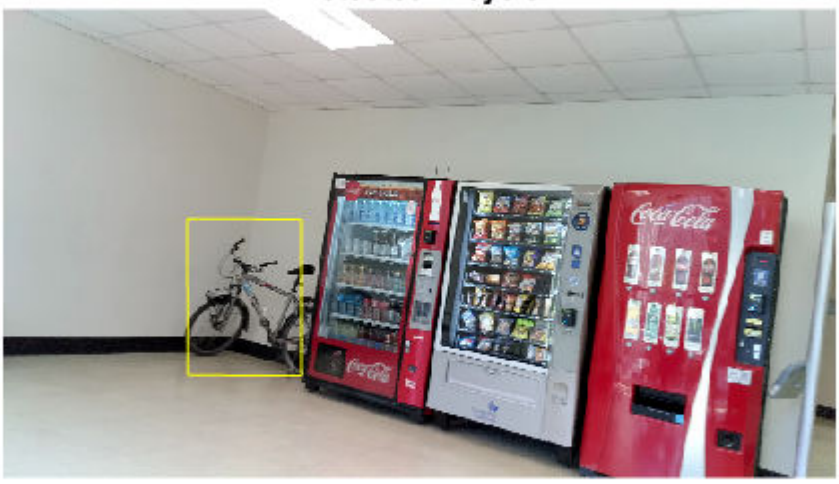
Detected Bicycle



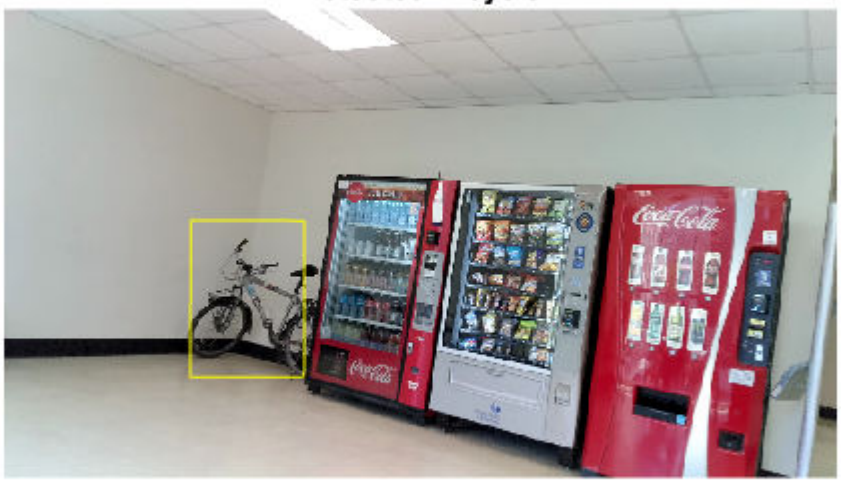
Detected Bicycle



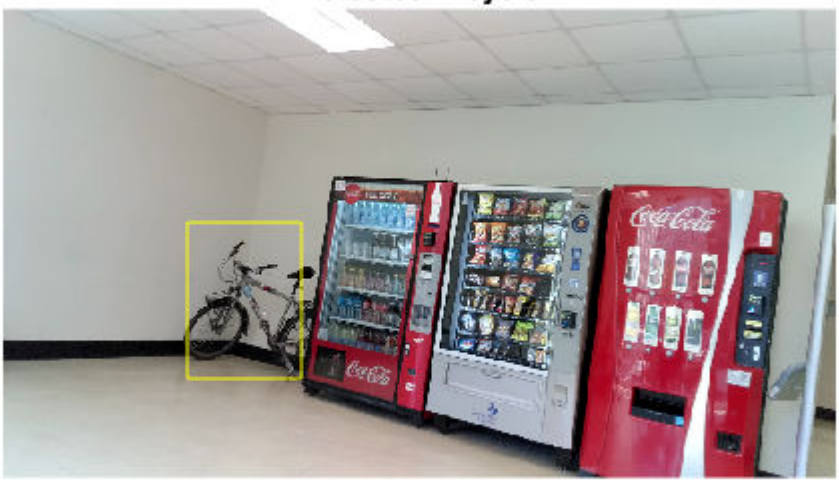
Detected Bicycle



Detected Bicycle



Detected Bicycle



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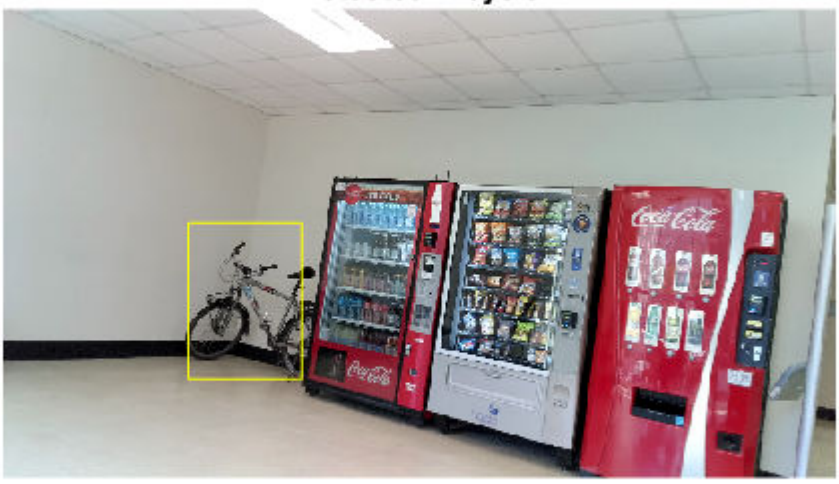

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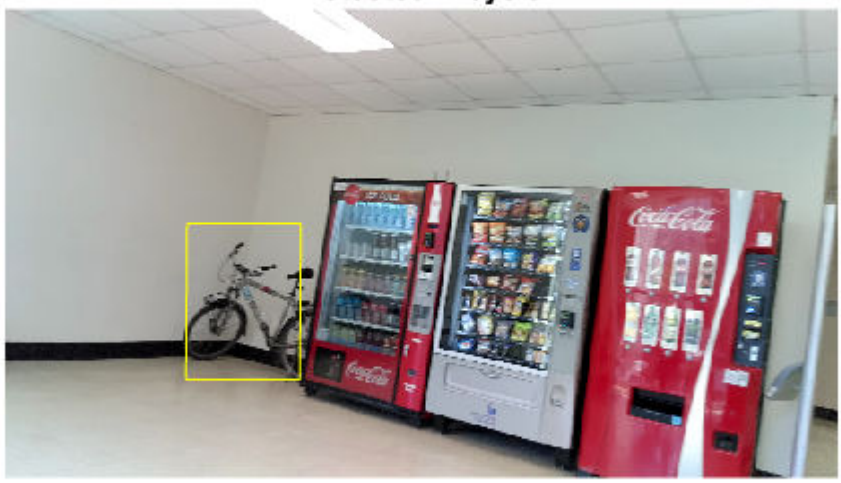

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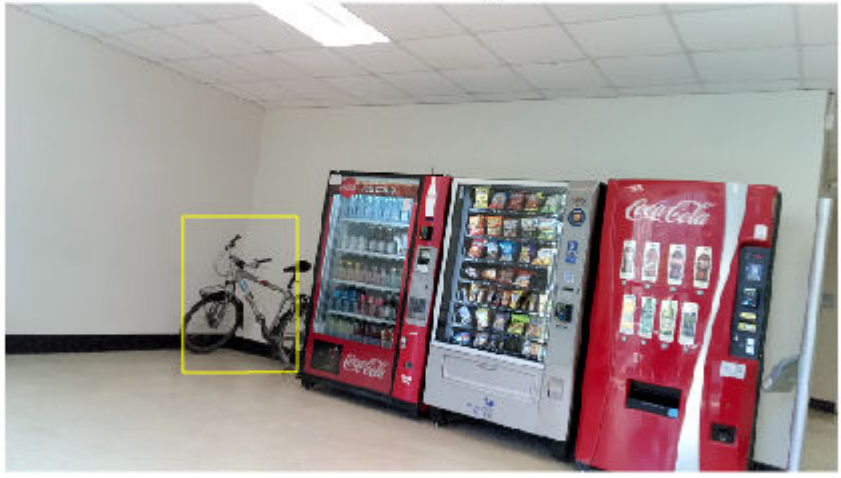
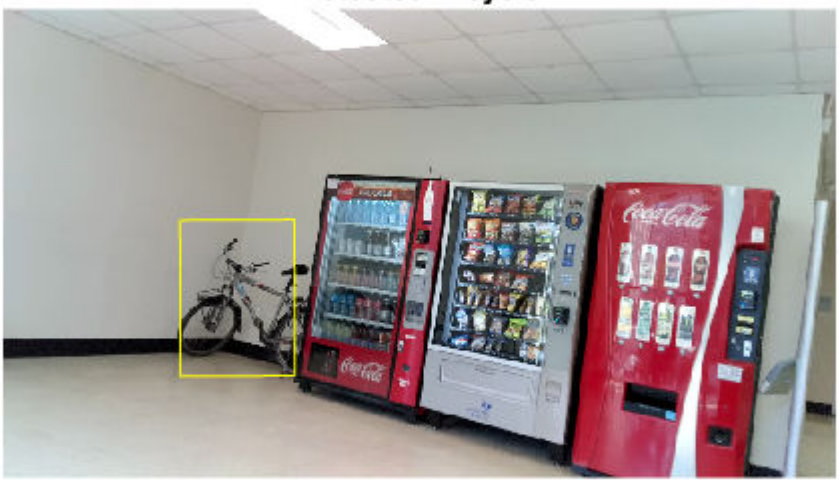
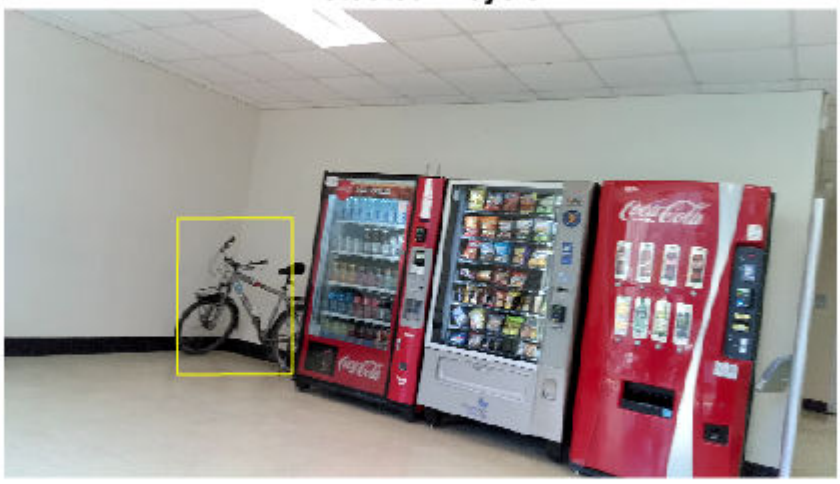


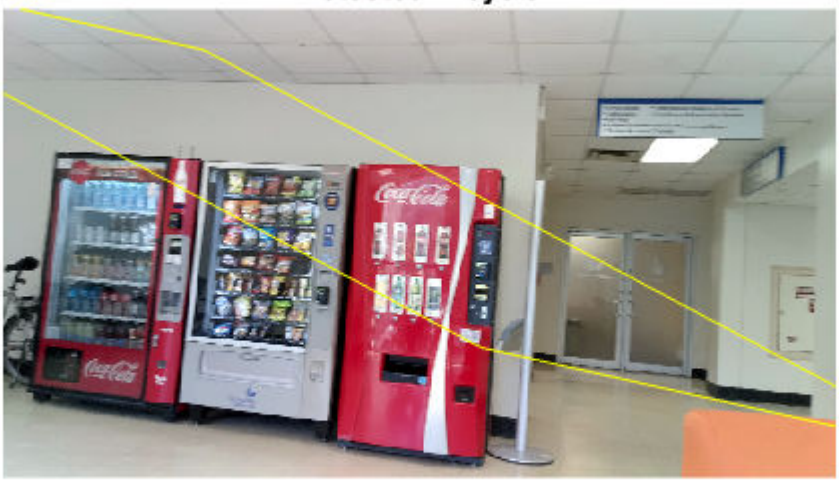
Detected Bicycle



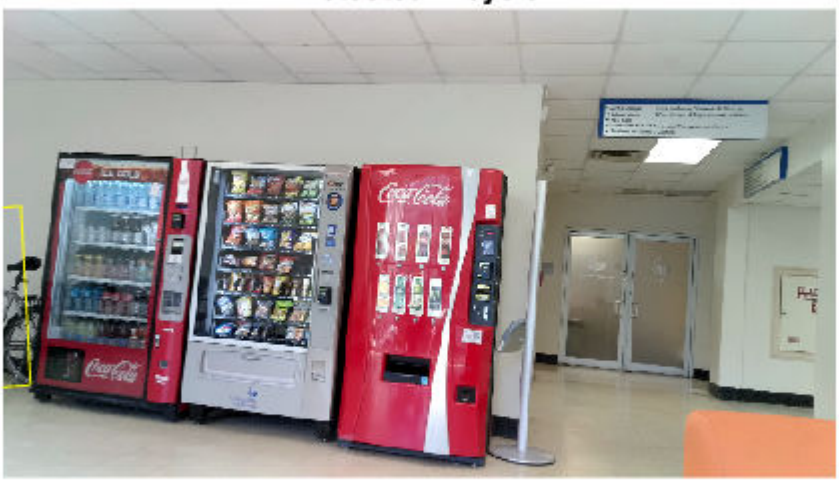
Detected Bicycle



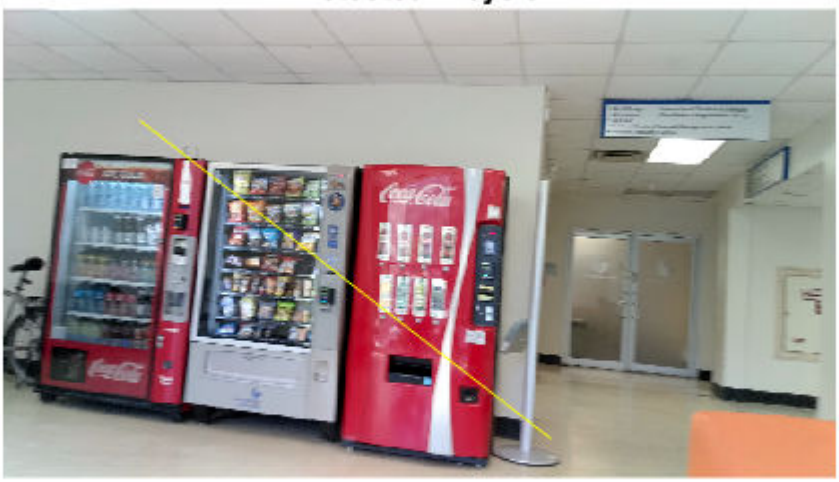
Detected Bicycle



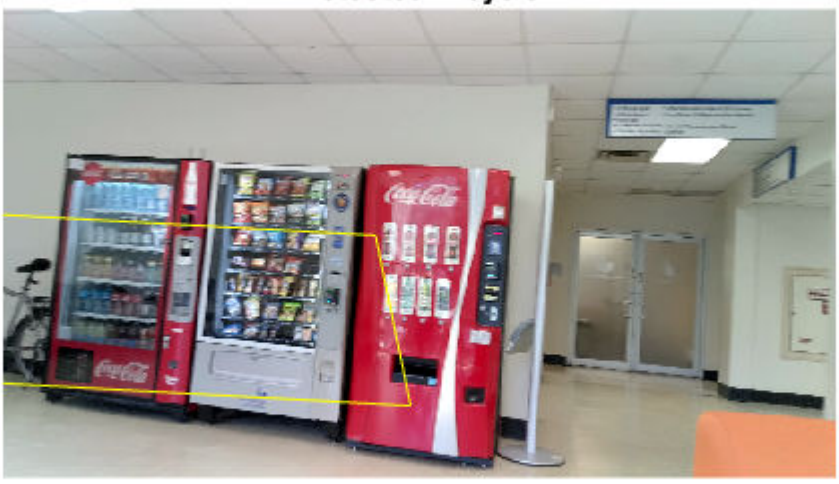
Detected Bicycle



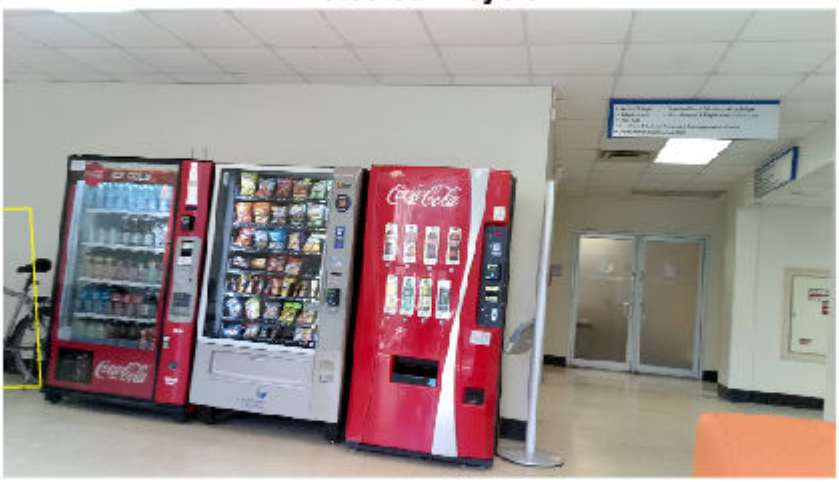
Detected Bicycle



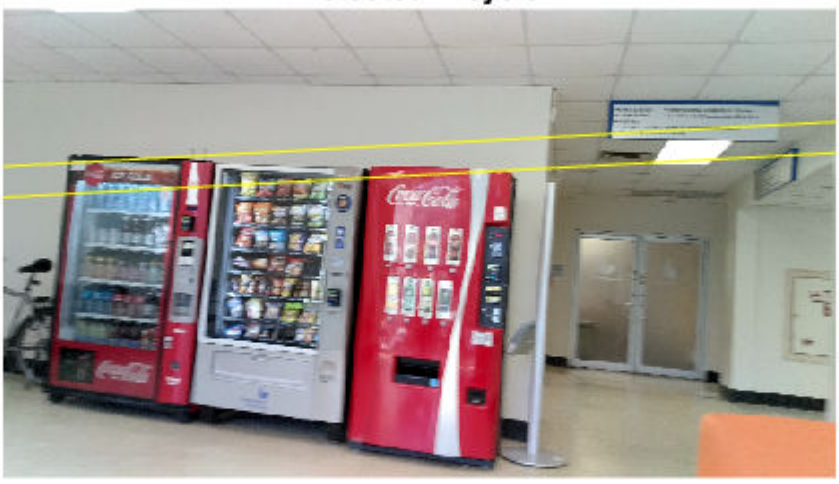
Detected Bicycle



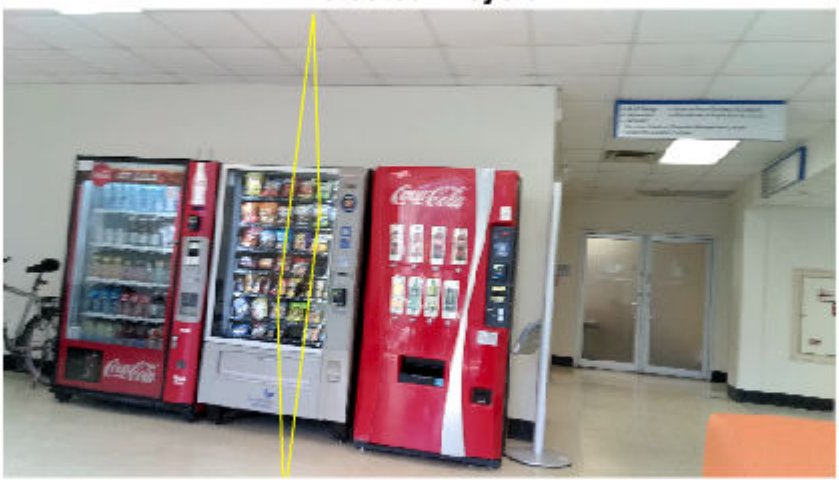
Detected Bicycle



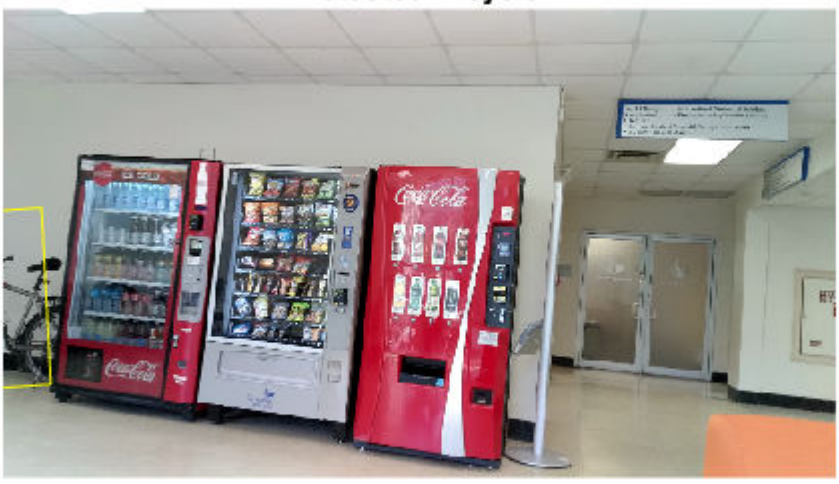
Detected Bicycle



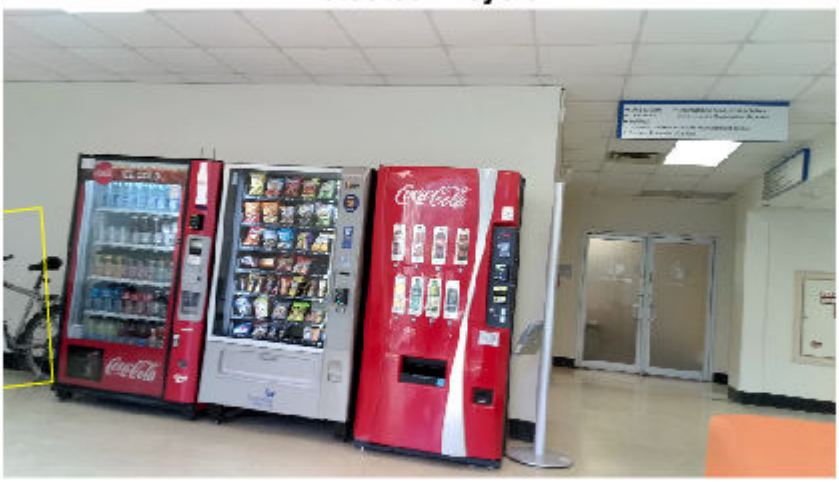
Detected Bicycle



Detected Bicycle



Detected Bicycle



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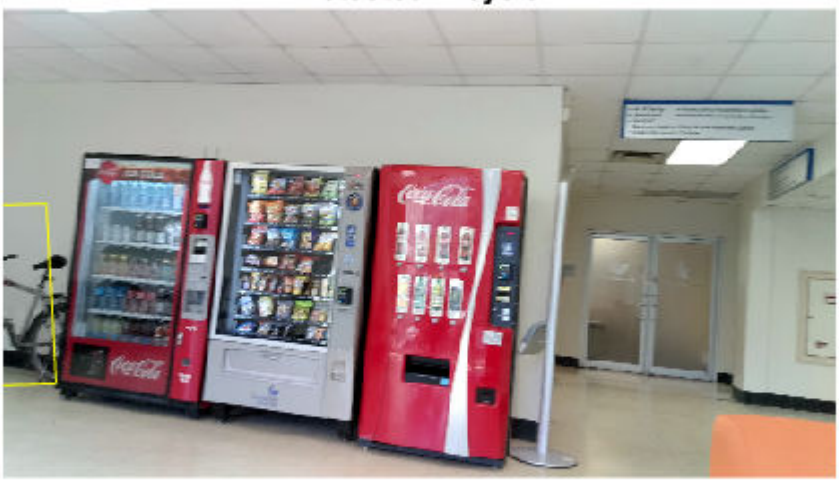
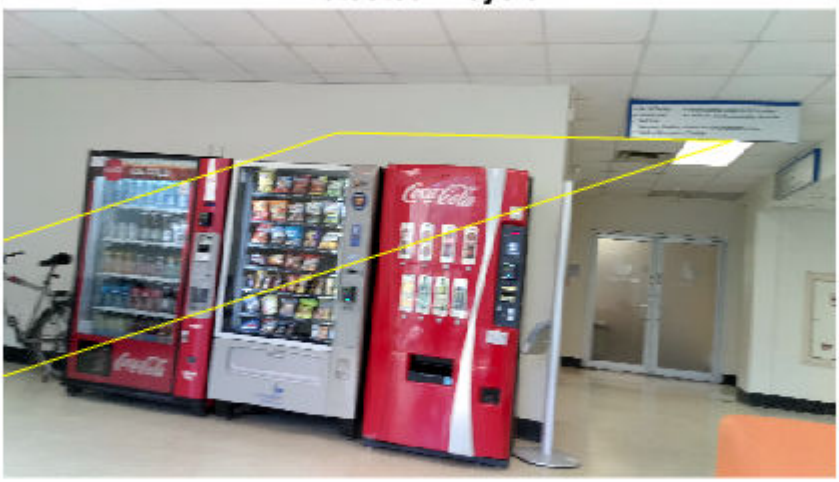


Detected Bicycle

Detected Bicycle

Detected Bicycle



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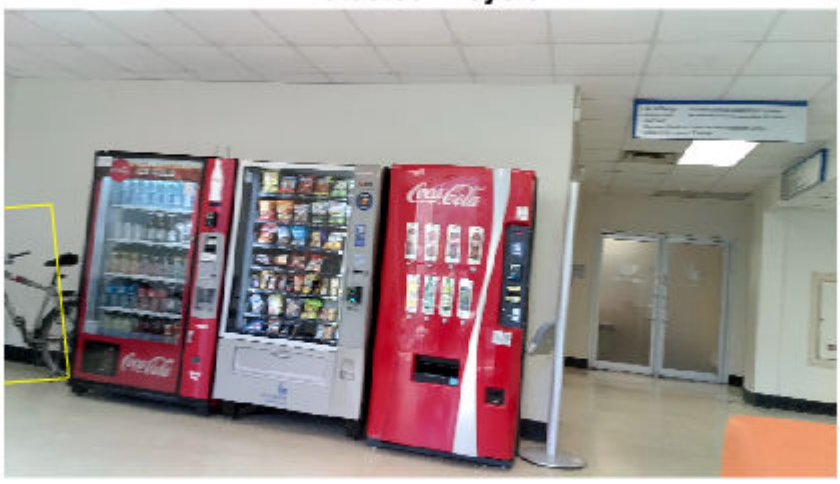

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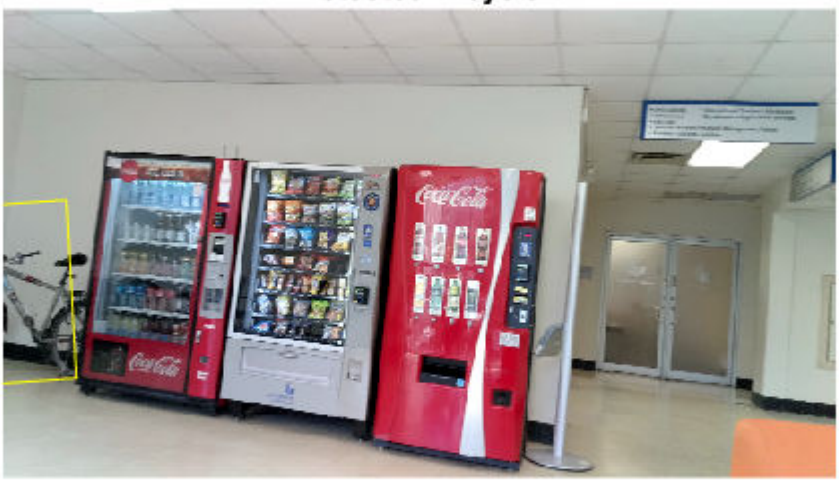
Detected Bicycle



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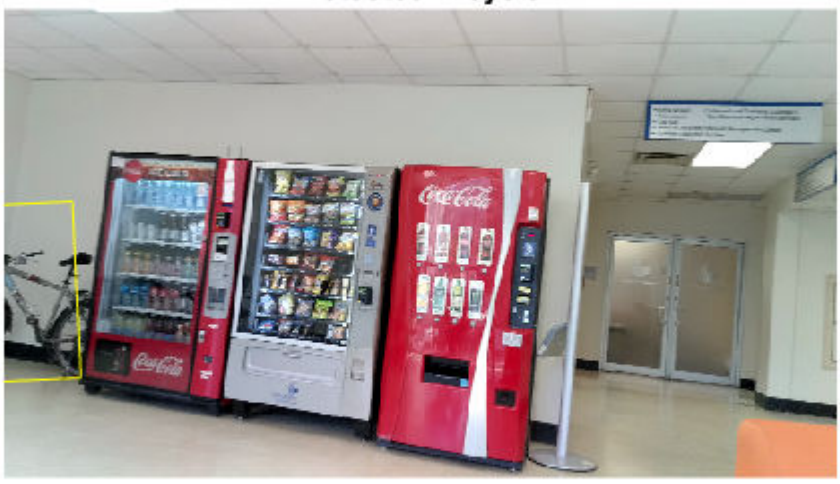

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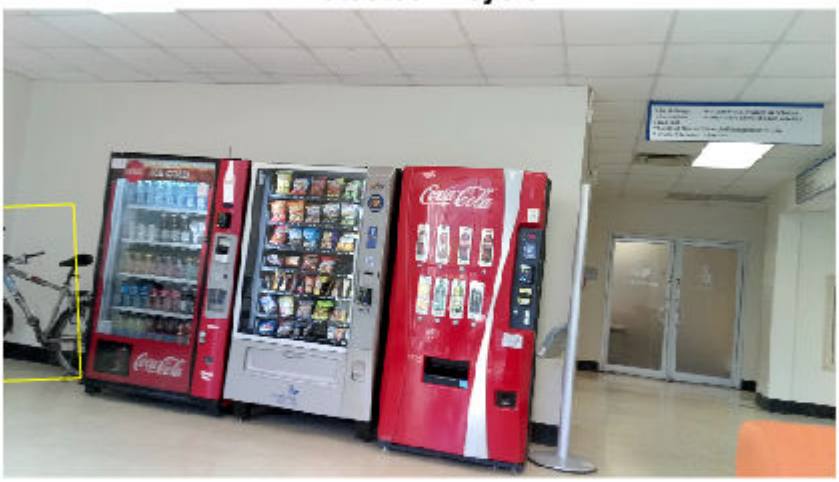

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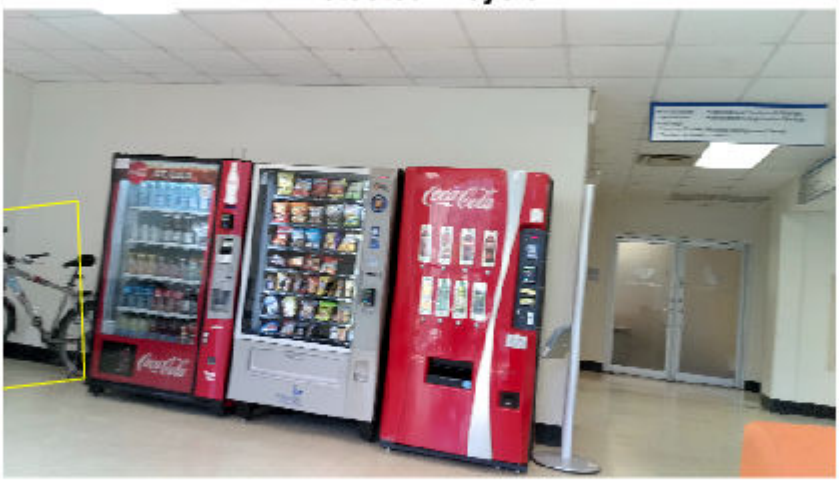

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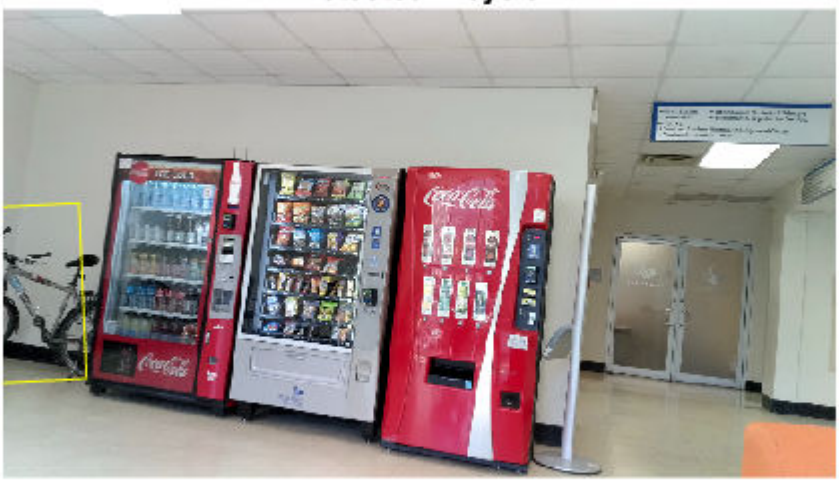

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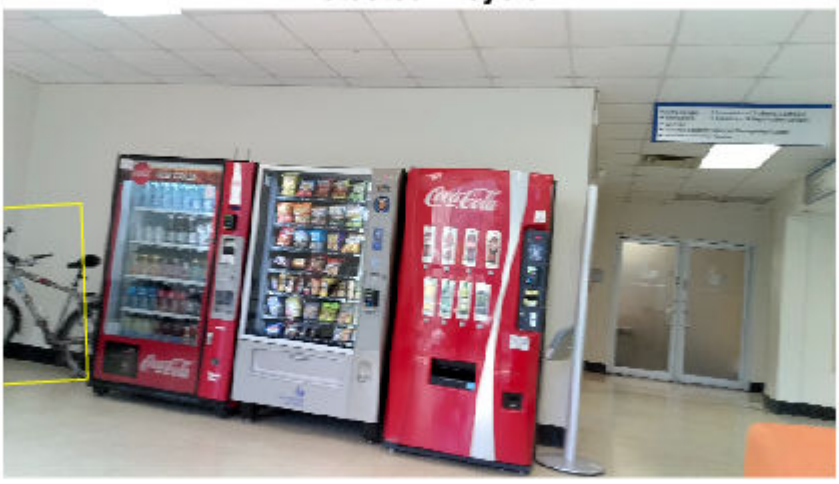

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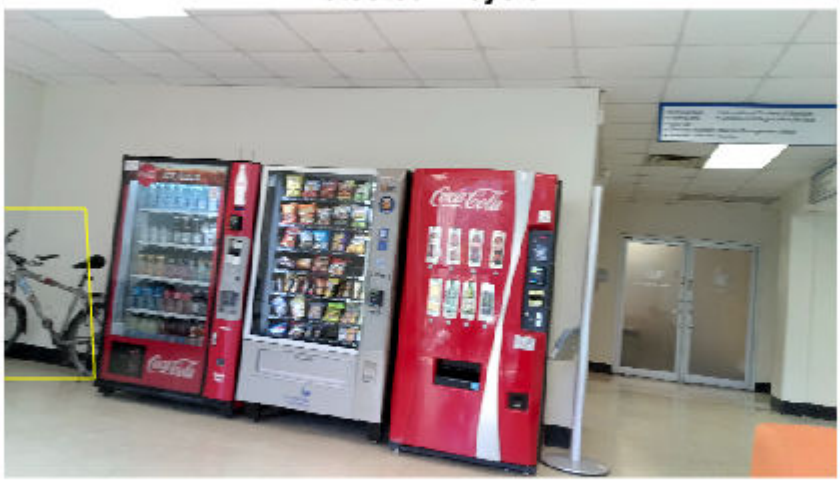

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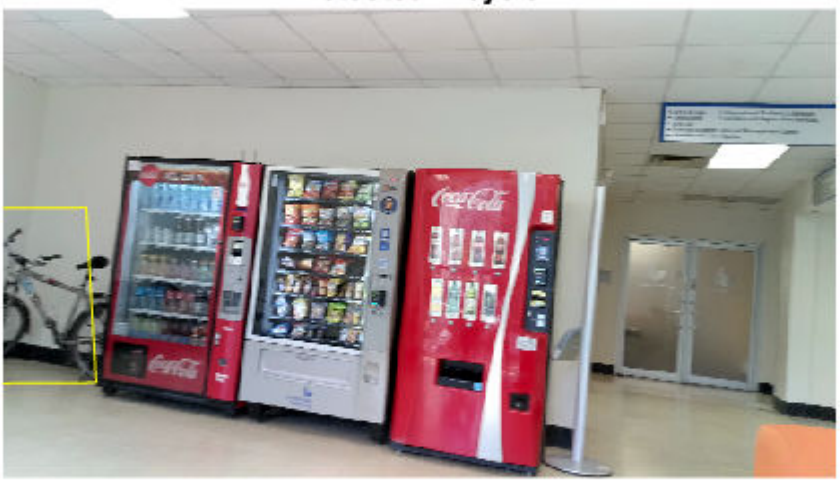

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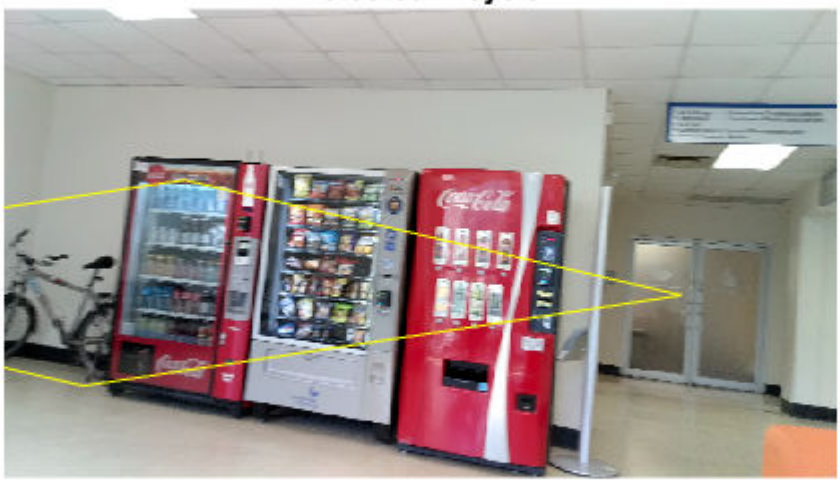

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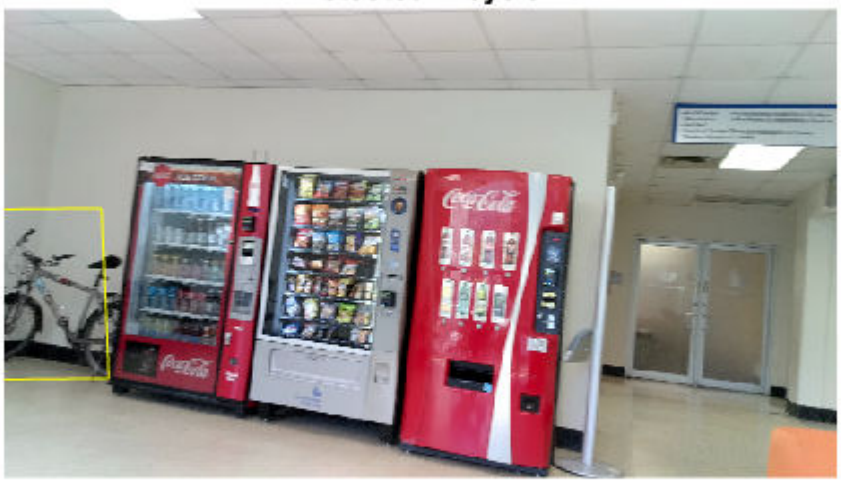

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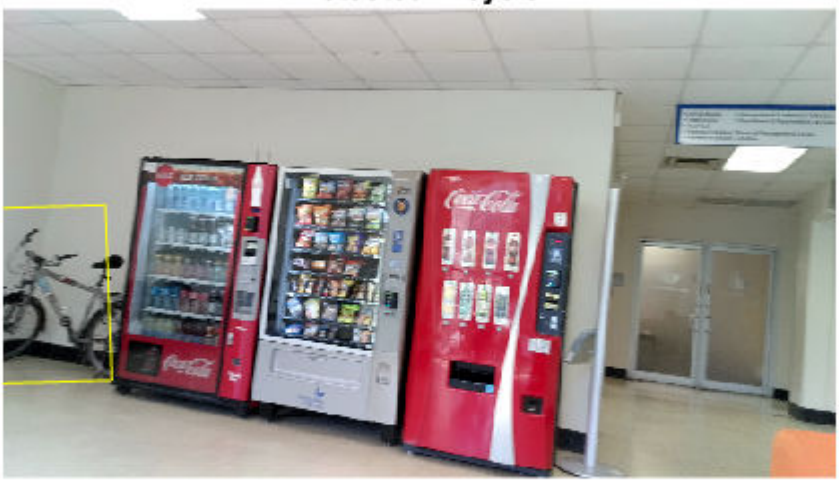

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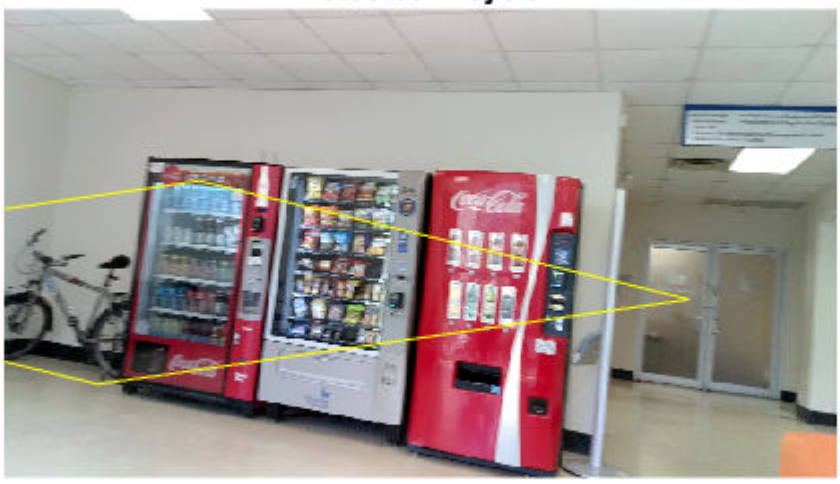

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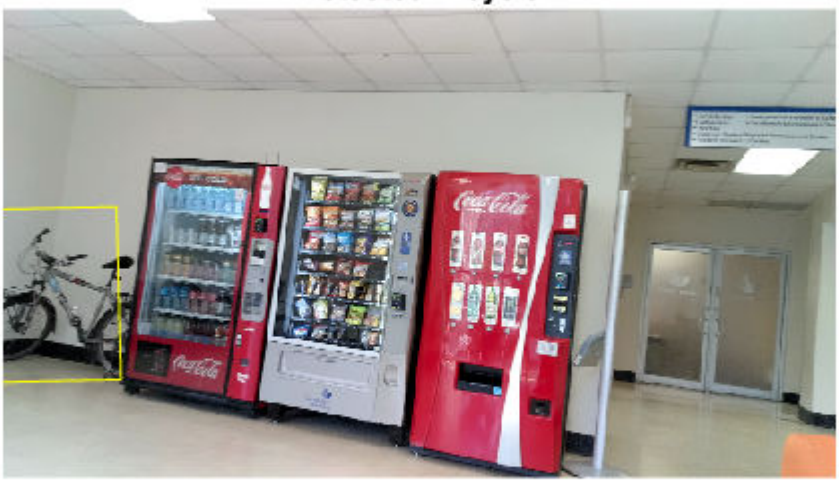

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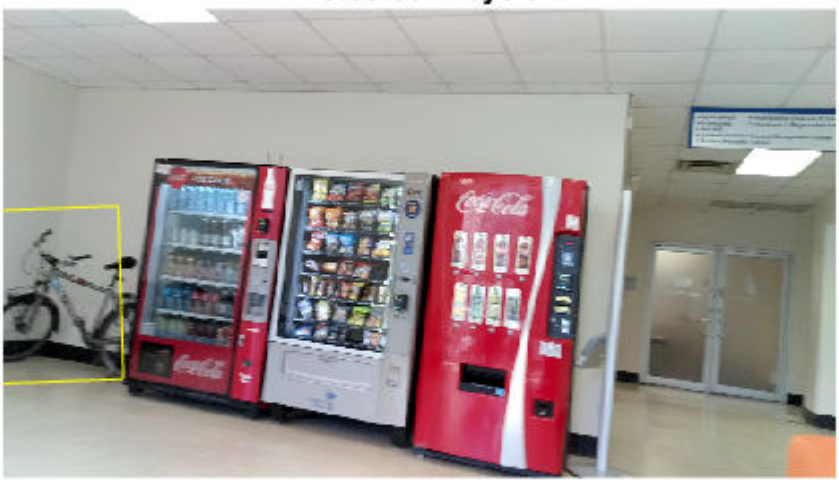

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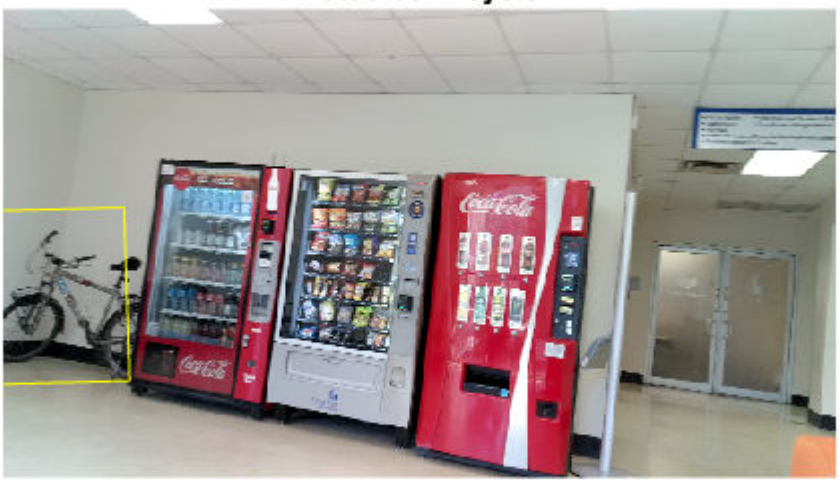

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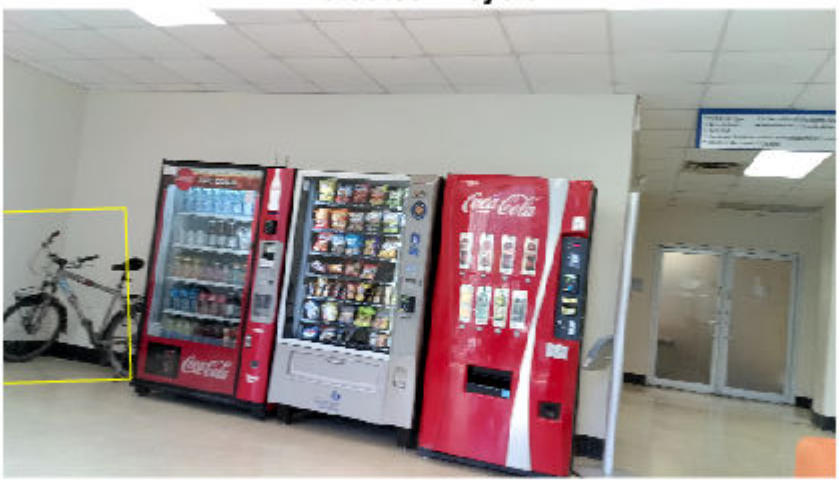

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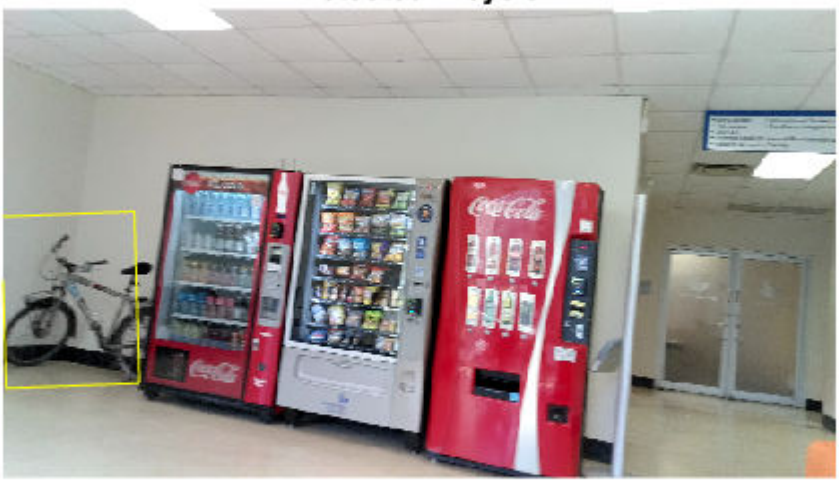

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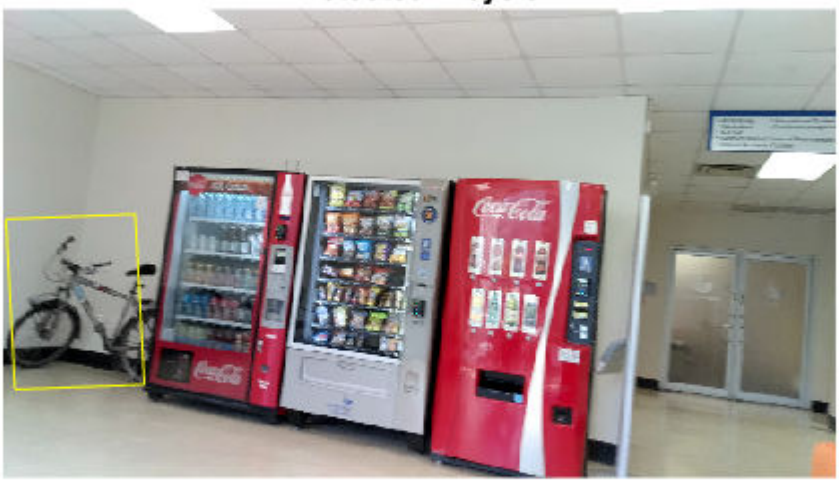

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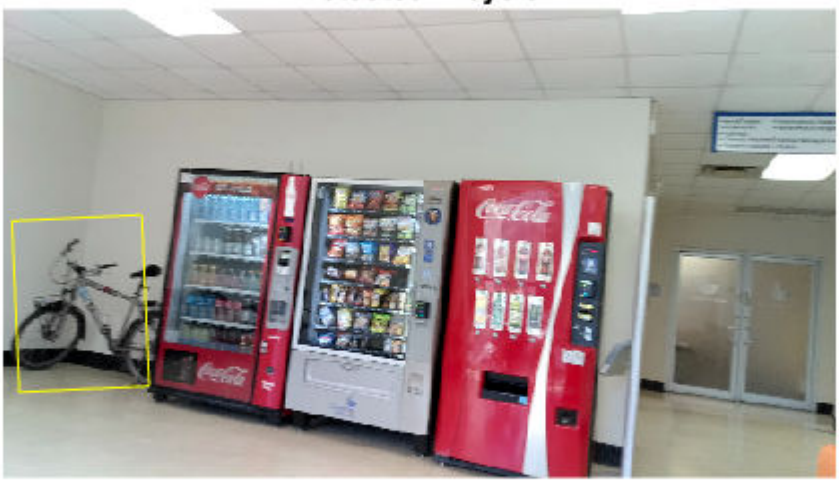

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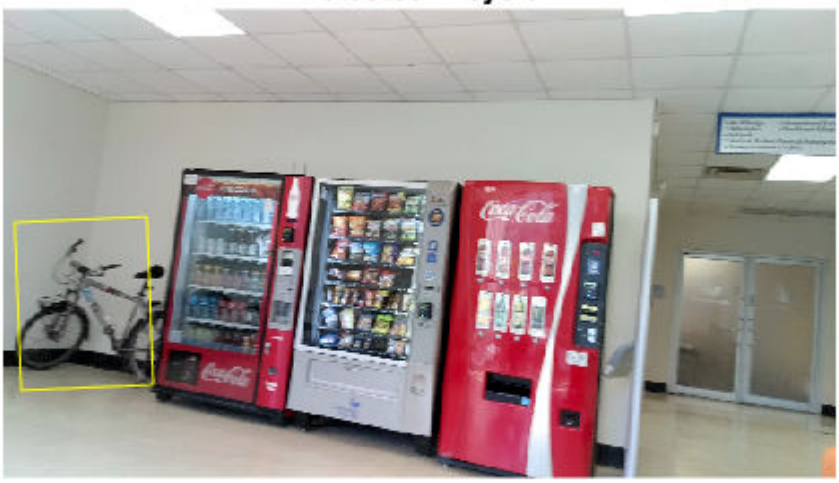

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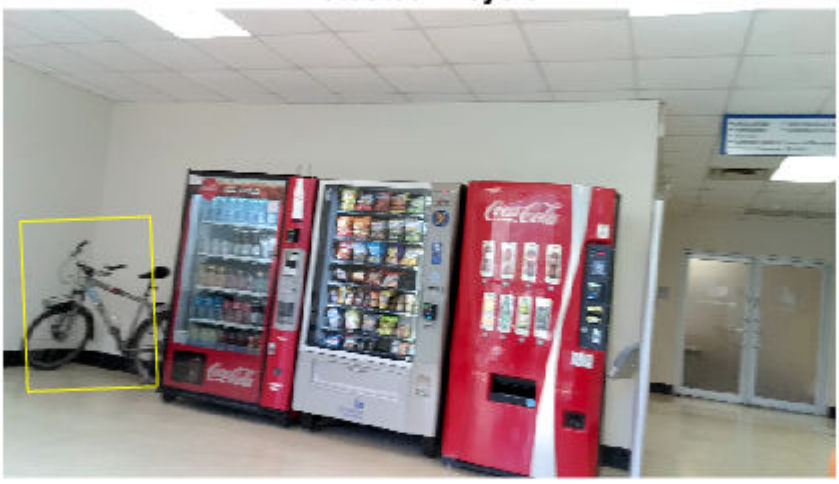

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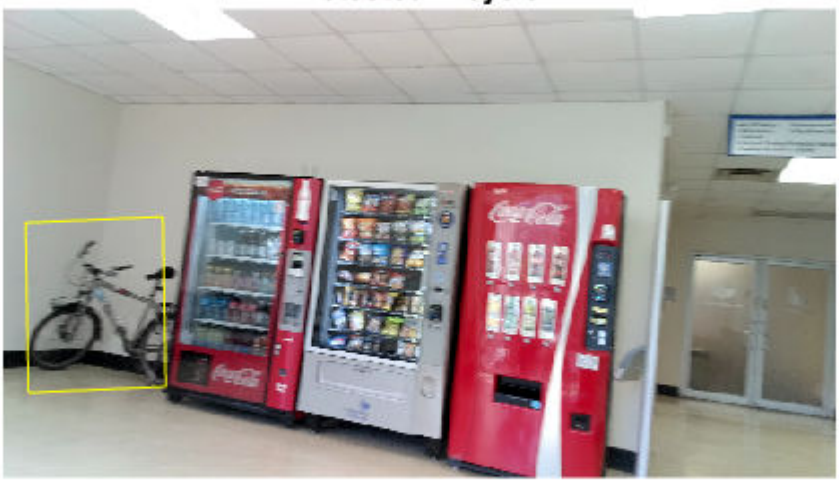

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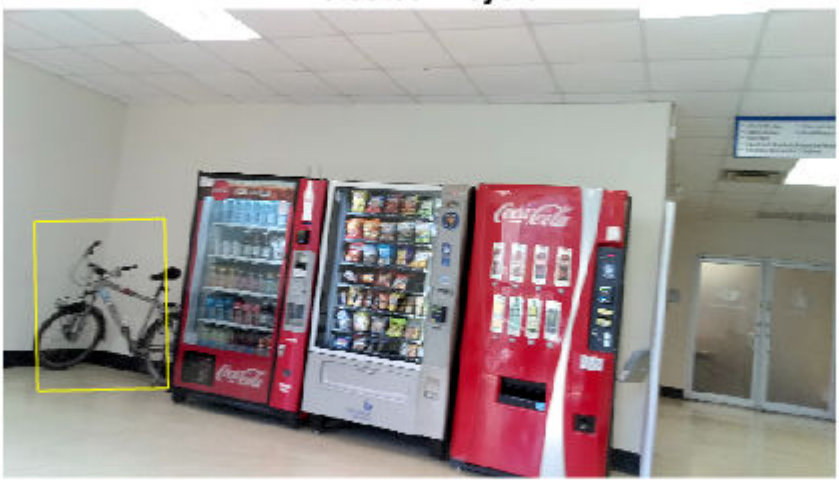

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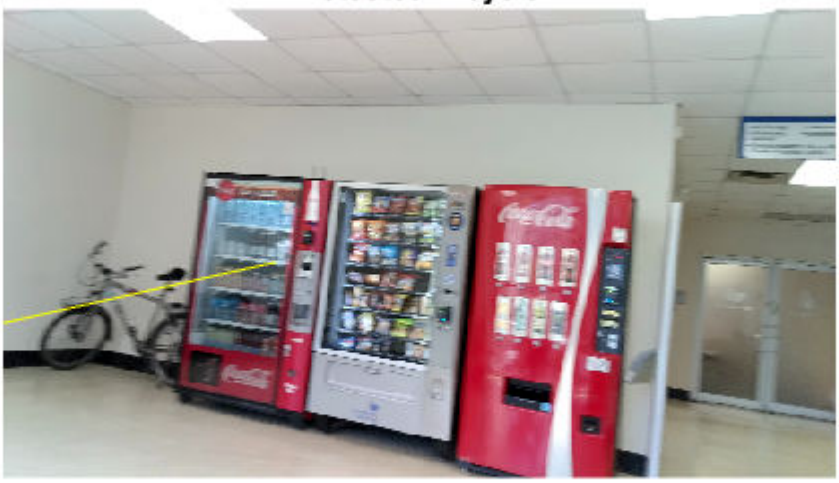

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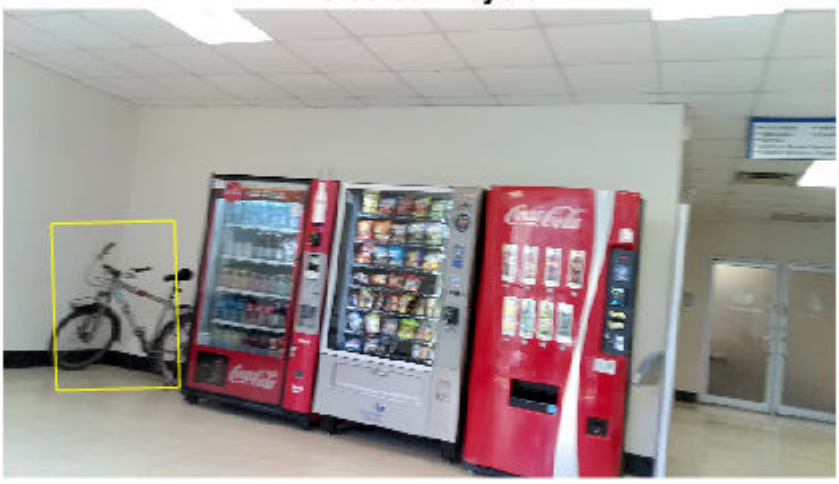

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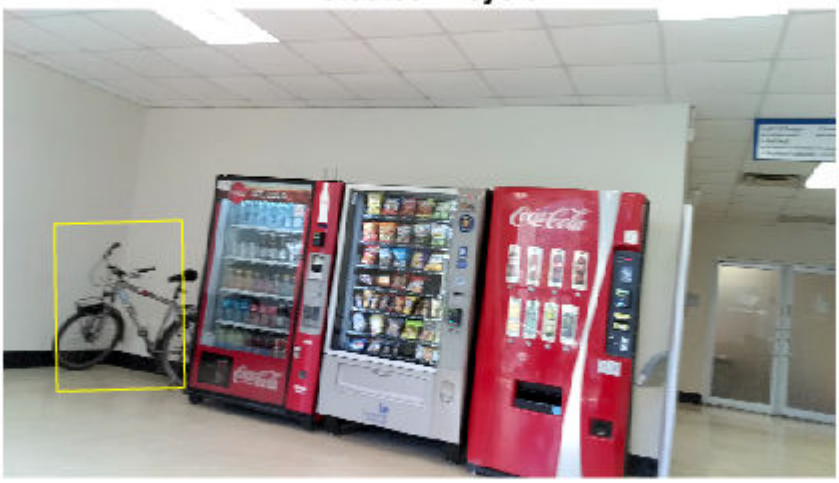

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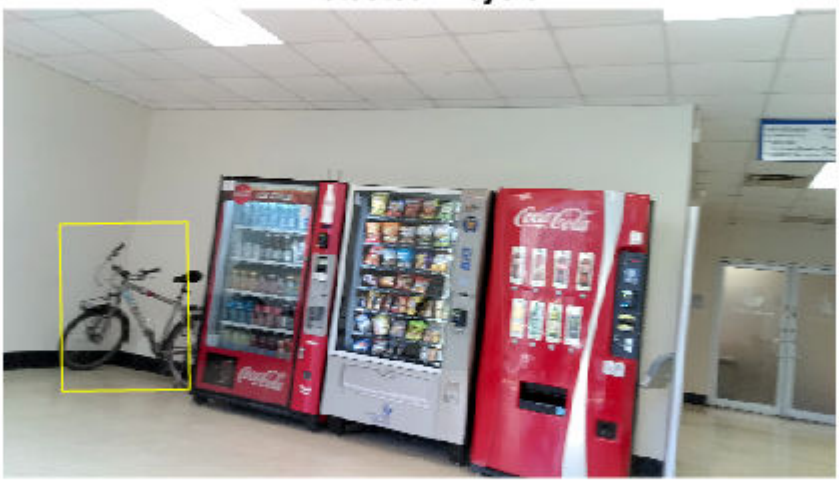

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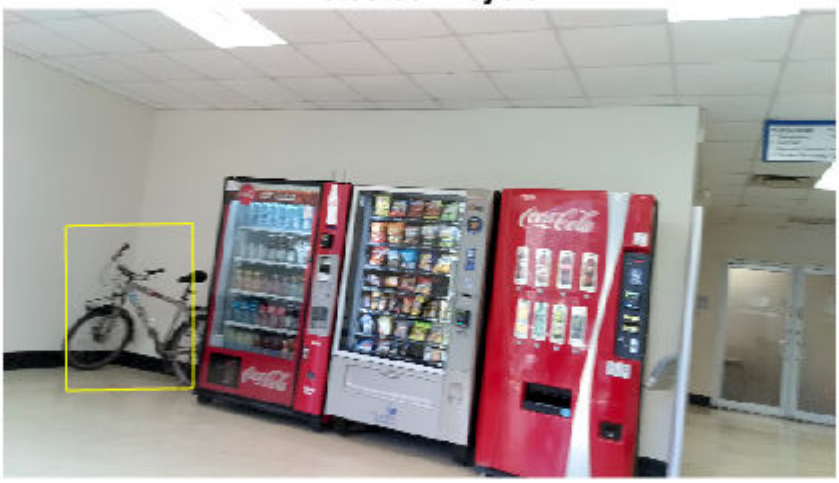

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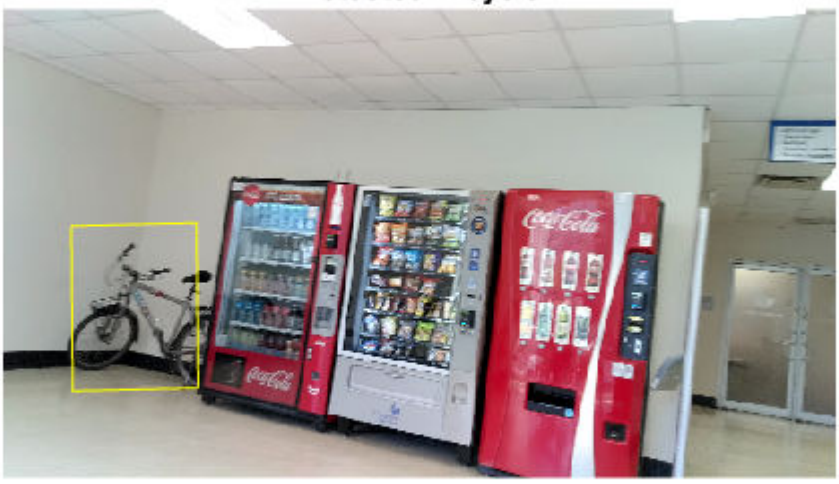

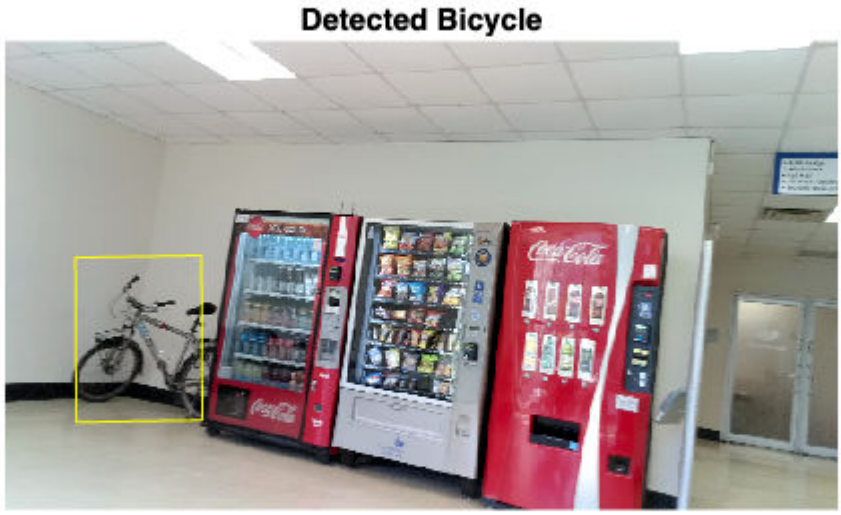
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