

Classify an Unlabeled Ground Cover Image

To classify a new, unlabeled image, you must extract predictor features from the image. The trained models can then assess these predictor features and make a class prediction for the image.

If your function does not pass the assessment, go back to the project introduction reading and refine your approach in MATLAB.

You will be assessed on:

1. Predictor feature values for `gcTableSaturation.avgSat` and `gcTableSaturation.stdSat`
2. Predicted classification of the unlabeled image in `gcTableSaturation.prediction`
3. Predictor feature values for `gcTableBag.f1` through `gcTableBag.f500`
4. Predicted classification of the unlabeled image in `gcTableBag.prediction`

We are providing you with the following:

- `img` - the unlabeled image in the RGB color space.
- `gcClassifierSaturation` - an SVM model trained to classify ground cover images using hand-selected predictor features based on image saturation values.
- `gcClassifierBag` - an SVM model trained to classify ground cover images using predictor features automatically generated using the `bagOfFeatures` function.
- `bag` - the bag of visual words object used to encode the predictor features used to train `gcClassifierBag`.

```
img = imread("ocean.jpg");           % Load the unlabeled image
load gcClassifierSaturation.mat       % Load the model trained using hand-selected features
load gcClassifierBag.mat              % Load the model trained using automatically generated features
load bag.mat                          % Load bag of visual words object created by bagOfFeatures

% Paste your code from "predictUnlabeledGroundCoverImage.mlx" here:
imshow(img);
```



```
gcTableSaturation = extractRoadSideFeature(img);
featNames = "f" + string(1:500);
bag1 = encode(bag, img);
```

Encoding images using Bag-Of-Features.

* Encoding an image...done.

```
gcTableBag = array2table(bag1,"VariableNames",featNames);
```

```
gcTableSaturation.prediction = gcClassifierSaturation.predictFcn(gcTableSaturation)
```

```
gcTableSaturation = 1×3 table
```

	avgSat	stdSat	prediction
1	0.1436	0.0731	Snow

```
gcTableBag.prediction = gcClassifierBag.predictFcn(gcTableBag)
```

gcTableBag = 1×501 table

...

	f1	f2	f3	f4	f5	f6	f7	f8
1	0.1348	0.0071	0.0852	0.0142	0.0237	0.0166	0.0308	0.0284

```
function gcTableSaturation = extractRoadSideFeature(img)
```

```
imgHSV = rgb2hsv(img); % Convert an RGB image to HSV  
img1 = imgHSV(:,:,2); % Save the image saturation data
```

```
avgSat = mean(img1(:));  
stdSat = std(img1(:));  
gcTableSaturation = table(avgSat,stdSat);  
end
```