In this assessment, you will prepare your images for classification and extract saturation-based features.

These features will be used to train a classification model in the next section, so it is important that you take this quiz as many times as necessary to ensure that your data set is correctly prepared and ready for classification.

1. 1 / 1 point

Organize the Roadside Ground Cover images (which can be found in the "MathWorks Images" subfolder of the "Data" folder in the course files download) into an image datastore. Use the subfolder names "Snow" and "No Snow" as the image labels.

Then split the datastore into training and testing subsets while keeping **85%** of the images in the training datastore.

How many images are labeled as "Snow" in the **training** datastore?

85

Correct

Your next task is to extract predictor features from the images for classification. These features will then be used to train your model. Previously, you extracted grayscale intensity-based features from the concrete image dataset. For this new dataset, you'll instead extract color saturation-based features.

In MATLAB, pixel saturation values are stored in the second color plane of the HSV (Hue-Saturation-Value) color space. Since the images are initially in the RGB (Red-Green-Blue) color space, use the code below to extract the saturation color plane from a given image. You can save an image's saturation values using the code below.

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

The following two questions ask you to consider predictor feature values for "RoadsideA_1.jpg".

NOTE: This image could be assigned to either your training or your test set. Either way, you can calculate the mean saturation of this image by reading in the image from its original location:

```
img = imread("Data/MathWorks Images/Roadside Ground Cover/No Snow/RoadsideA_1.jpg");
```

2. What is the **mean saturation** for the "No Snow" labeled image "RoadsideA_1.jpg"? 1 / 1 point

0.3806

Correct
Compare this to a "Snow" labeled image "RoadsideB_1.jpg", with a mean saturation value of 0.1259.

3. What is the **standard deviation of the saturation** for the "No Snow" labeled image "RoadsideA_1.jpg"? 1 / 1 point

0.2302

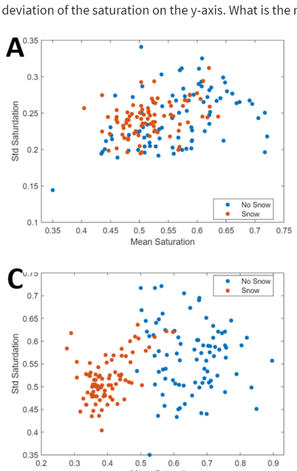
Correct
Compare this to a "Snow" labeled image "RoadsideB_1.jpg", with a standard deviation of saturation value of 0.1028.

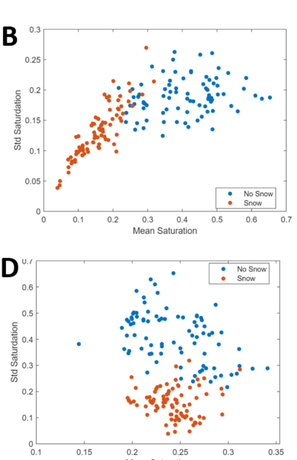
4. Create a table for the training dataset that contains a row for each image and a column for its: 1 / 1 point

- Filename
- Label (either "Snow" or "No Snow")
- Mean saturation
- Standard deviation of the saturation

Hint: you can copy and modify portions of the `preparingYourImagesForClassification.mlx` and `extractConcreteFeatures.m` scripts to use as a template.

Once completed, make a grouped scatter plot of each image's mean saturation on the x-axis and the standard deviation of the saturation on the y-axis. What is the result?





Your own plot may differ slightly depending on the randomization of splitting the training and testing datasets.

- ○ A
- ◉ B
- ○ C
- ○ D

Correct
`gscatter(groundCoverTable.saturationAvg,groundCoverTable.saturationSTD,groundCoverTable.label);`