

In the previous graded quiz, you prepared a collection of ground cover images for classification. In this quiz, you will use the predictor features that you extracted to train and evaluate classification models in the Classification Learner app.

1.



1 / 1 point

Import your data into the Classification Learner App. Use the default 5-fold cross-validation. Then train an "Optimizable KNN" model with an optimized value for the "Number of neighbors" hyperparameter. Remember, you can select which hyperparameters to automatically optimize using the menu shown below:

Summary

Model 6: Optimizable KNN

Status: Draft

Model Hyperparameters

| Optimize                            | Hyperparameters     | Values                              |
|-------------------------------------|---------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | Number of neighbors | 1                                   |
| <input type="checkbox"/>            | Distance metric     | Euclidean                           |
| <input type="checkbox"/>            | Distance weight     | Equal                               |
| <input type="checkbox"/>            | Standardize data    | <input checked="" type="checkbox"/> |

[Read more about KNN model options](#)

Feature Selection: 2/2 individual features selected

PCA: Disabled

Misclassification Costs: Default

Optimizer: Bayesian optimization

After training, what is the resulting optimal "Number of neighbors"? (You can find it in the "Minimum Classification Error Plot" tab.)

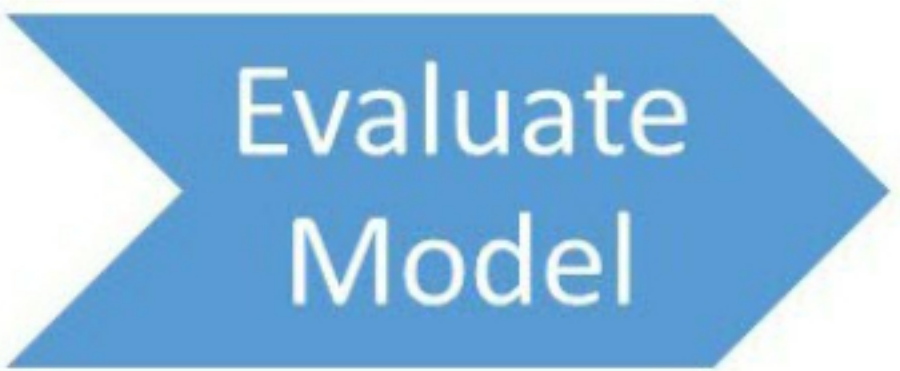
There is more than one correct answer, so if you run the optimization more than once, you may get different answers.

11

☒ **Correct**

The specific value you find can vary depending on if you randomized the labels when splitting the training and testing datasets.

2.



1 / 1 point

Look at the Confusion Matrix of your trained KNN model from the previous question.

How many images with the true label of "No Snow" were incorrectly predicted as belonging to the class of "Snow"?

3

☒ **Correct**

For our models, we typically got between 4 and 11.

3. Create the test data table from the test dataset created at the start of this quiz. Load it into the app to evaluate the model's performance. What is the resulting accuracy (as a numerical value between 0 and 100)?

1 / 1 point

95.9

☒ **Correct**

We got accuracy values between of 93-97% for our optimized models.

4. Based on a comparison of your trained model's validation and test accuracies, would you rely on it to classify new images? Why or why not?

1 / 1 point

It depends!

☒ **Correct**

Our answer is: it depends!

This model is sufficient if you need a very simple and quick classifier with high (but not perfect) accuracy. However, if your use requires perfect accuracy at detecting snow, you'll likely need to create better predictor features or use another technique, like Deep Learning.