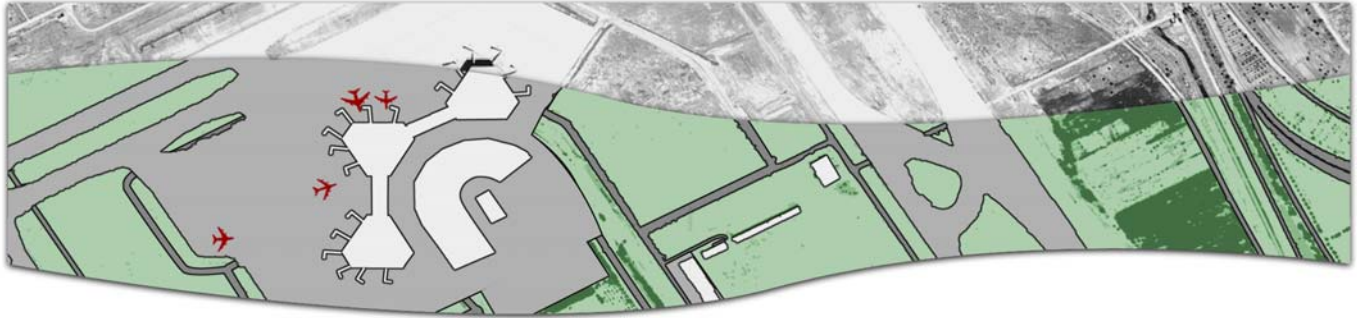


Feature Analyst® QuickStart GUIDE



4.2 for ArcGIS

CLUTTER REMOVAL

Feature Analyst's clutter removal Hierarchical Learning process allows you to refine your Feature Analyst results by removing incorrect classifications returned in your result layers.

There are two ways to remove clutter:

Remove Clutter

By identifying a sampling of the best examples of correct and incorrect features in your result layer, the Learner is able to reclassify your original results.

Remove Clutter by Shape

By selecting how you want the Learner to view your correct/incorrect examples (to eliminate polygons that are *shaped* differently from your target feature.), the Learner is then able to separate correct and incorrect polygons from your result feature class.

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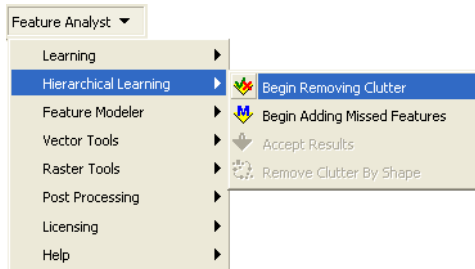
We put the Information in GIS



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Remove Clutter

- 1 Highlight the **result layer** in the table of contents.
- 2 Choose **Feature Analyst** on the toolbar, choose **Hierarchical Learning** on the drop-down menu, and then choose **Begin Removing Clutter**.



The Save Feature As dialog box opens.

By default, Feature Analyst names the file in the Namefield using the last file name, the process (in this case Rmv, for Remove Clutter), and incremental numbering, as necessary.

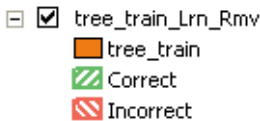
- 3 Accept the **default file name** and **file location**.

-or-

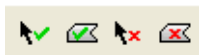
Provide a **new name** and **location** for the file and choose **Save**.

The Hierarchical Learning layer appears in the table of contents, selected and ready for editing.

The new layer has three classes: previous results (in this case, tree_train), Correct, and Incorrect.




The Clutter Removal tools on the Feature Analyst toolbar become available, enabling you to identify entire correct and incorrect polygons, as well as digitize portions of polygons that are correct or incorrect.

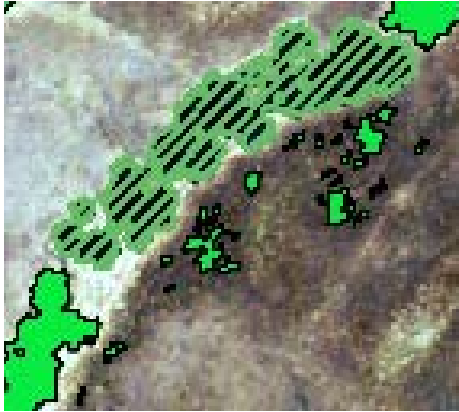


Note: If you are planning to run the Remove Clutter by Shape feature, consider shape when selecting/digitizing examples of correct/incorrect features.

Select Correct Features

- Select the **Select Correct Features**  tool, and then click on a sampling of result polygons that best represent your target features.

Entire selected polygons are identified as correct.



Digitize Correct Features

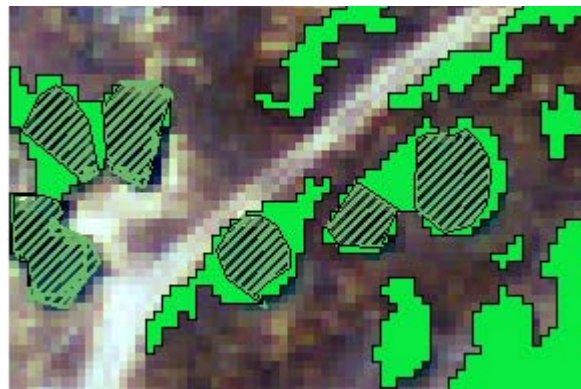
- 1 Select the **Digitize Correct Features**  tool.

The pointer changes to a crosshair \oplus when you move over the image in the workspace.

- 2 Digitize correct areas of the result polygons.




Training layer off

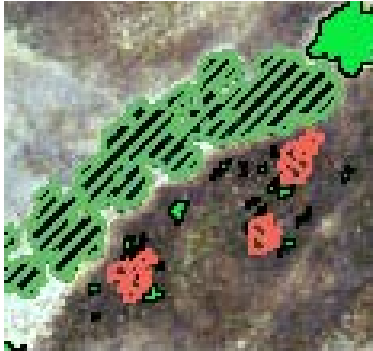


Training layer on with correct areas of the target features digitized

Select Incorrect Features


- Select the **Select Incorrect Features**  tool, and then click on a sampling of incorrect result polygons in the feature class.

Entire selected polygons are identified as incorrect.



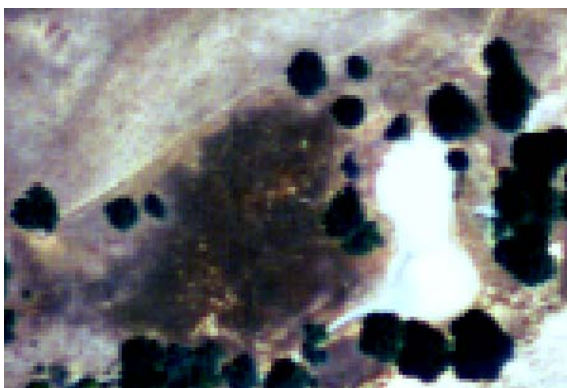
Digitize Incorrect Features

- 1 Select the **Digitize Incorrect Features**  tool.

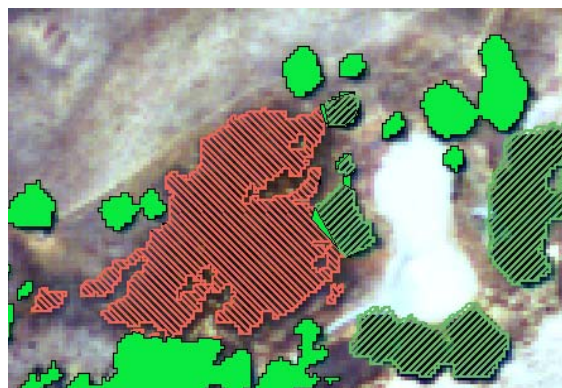
The pointer changes to a crosshair  when you move over the image in the workspace.

Note: You must select both correct and incorrect examples within the clutter training layer. If only one class is present, a message will open during classification indicating “no training examples found.”

- 2 Digitize only the portions of the result polygons in the feature class that do not represent your target features.



Training layer off



Training layer on with incorrect areas (red) of the target features digitized

Run the Clutter Removal Learning Pass

Skip to “Run a Learning Pass to Remove Cutter by Shape” if you want to eliminate polygons that are *shaped* differently from your target feature.

- 1 Save your edits and then stop the editing session.

-or-

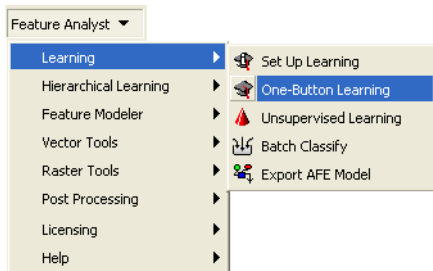
Skip this step and quickly save your edits via a message box that appears when you begin One-Button Learning.

- 2 Use the learning settings from the previous extraction pass.

-or-

- 3 Set new learning parameters, as necessary, on the Set Up Learning dialog box.

- 4 Choose **Feature Analyst** on the toolbar, choose **Learning** on the drop-down menu, and then choose **One-Button Learning**.



The Save Feature As dialog box opens.

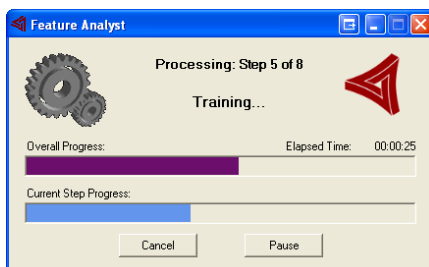
By default, Feature Analyst names the file in the Name field using the last file name, the process (in this case Lrn, for Learning), and incremental numbering.

- 5 Accept the **default file name** and **file location**.

-or-

Provide a **new name** and **location** for the file and choose **Save**.

The Feature Analyst Process box opens, displaying the progress of the process.



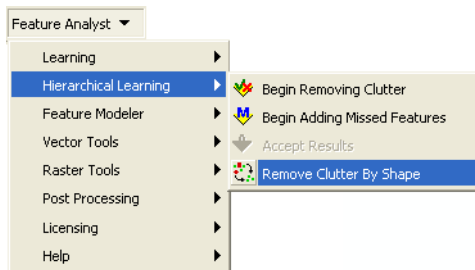
The clutter-removal result layer appears in the table of contents and displays in the workspace.

Run a Learning Pass to Remove Cutter by Shape

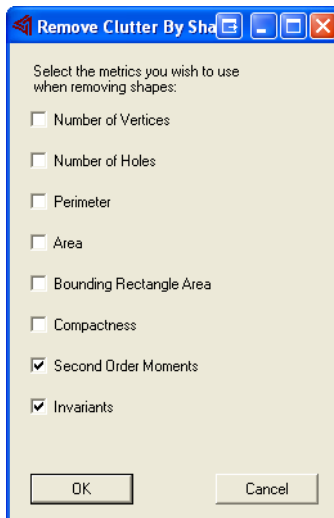
- 1 Save your edits and then stop the editing session.
- 2 Highlight **the layer** on which you identified the correct/incorrect result features in the table of contents.

Note: If you forget to save your edits, a message box appears, asking if you want to save your changes.

- 3 Choose **Feature Analyst** on the toolbar, choose **Hierarchical Learning** on the drop-down menu, and then choose **Remove Clutter by Shape**.



The Remove Clutter by Shape dialog box opens.



Note: When employing Remove Clutter by Shape, use one or more of the following settings for road extractions: Perimeter, Area, Second Order of Moments, or Invariants.

- 4 Select **one or more options**, according to the following descriptions, to remove clutter by shape:

OPTION	FUNCTION
Number of Vertices	Use when the correct shapes and incorrect shapes have a different number of vertices. For example, select this option to extract buildings from surrounding vegetation, which is normally characterized by large shapes and an irregular number of vertices.
Number of Holes	Use when the correct shapes and incorrect shapes have a different number of holes. This option is useful for extracting soil from forest cover when soil is returned by a solid shape and forest cover has a lot of holes.
Perimeter	Use when the correct shapes and incorrect shapes have different perimeters. This option is useful for differentiating irregular shapes from regular shapes, for example, vegetation polygons from buildings.
Area	Use when the correct shapes and incorrect shapes have different areas. This option is useful for filtering out either small shapes or large shapes.
Bounding Rectangle Area	Use when the shapes of either the correct or incorrect set are differentiated by a bounding rectangle, and the shapes of the other set are irregular. The system derives the metric by describing a bounding rectangle around the shape. This option is similar to the Area option.
Compactness	Use when one set of shapes has a significant number of holes and spreads irregularly over a large area, while the other is densely packed and regular. This option is useful when one set of shapes has a circular profile and the other set of shapes spreads out and contains holes, like sage brush clumps amidst dark colored grasses.
Second Order Moments	Use to divide a polygon extraction into two classes: large and small. This option uses the statistical properties of a shape, measuring orientation, elongation, and size relative to a given axis.
Invariants	Use when shapes of one set share a similar template, but differ in rotation and size. Since this option is unaffected by rotation and scaling, you can try using it with a feature data set that includes both urban and suburban area buildings, where buildings have various sizes and rotations but a similar template.

- 5 Choose **OK**.

The Save Feature As dialog box opens.

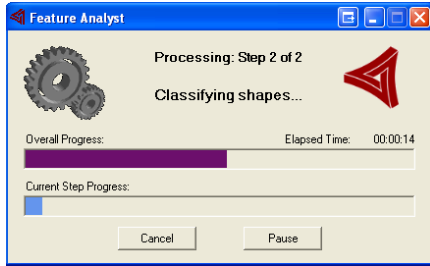
By default, Feature Analyst names the file in the Name field using the last file name, the process (in this case RS, for Remove Clutter by Shape), and incremental numbering.

- 6 Accept **the default file name and file location**.

-or-

Provide **a new name and location** for the file and choose **Save**.

The Feature Analyst process box opens, displaying the progress of the clutter removal.



The result layer appears in the table of contents and displays in the workspace.