

Image Analyst extension in ArcGIS Pro

Frequently Asked Questions

V1.0

Who is the target User Community for the Image Analyst extension?

The ArcGIS Image Analyst extension provides processing, modeling, tools, and capabilities for image and geospatial analysts who focus on the following areas:

- Image interpretation and exploitation
- Creation of information products from imagery
- Advanced feature interpretation and measurements from imagery
- Detailed feature compilation and measurement on stereo imagery
- Advanced image and spatial data analysis workflows for machine learning and feature extraction

It is designed to help facilitate imagery-based project workflows in operational environments.

What is included in the Image Analyst extension?

The Image Analyst extension includes:

- Stereo mapping—Visualize imagery and capture 3D feature data in a stereo viewing environment.
- Image space analysis—Work with oblique imagery oriented in an intuitive perspective view mode to facilitate effective image interpretation applications.
- Image classification—Perform pixel and object-based image analysis (OBIA) using image segmentation and machine learning classification tools and capabilities.
- Deep Learning—Use machine learning classification methods to classify or detect objects in remote sensing imagery. Deep learning is a type of machine learning that relies on multiple layers of nonlinear processing for feature identification and pattern recognition described in a model. Deep learning models are integrated with ArcGIS Pro for object detection, object classification, and image classification.
- Multidimensional Analysis—Perform complex analysis on multidimensional raster data to explore scientific trends and anomalies.
- Raster functions—Extend ArcGIS Pro image processing and raster analysis with additional functions. ArcGIS Pro enables you to apply these function on-the-fly or save your results if desired. These functions are especially useful for developing and running custom remote sensing and image processing chains and algorithms locally. For those users who have ArcGIS Enterprise and ArcGIS Image Server, create raster function chains and deploy them in distributed processing and storage environments either on-premises or in the cloud. These

raster function augment the existing list of functions provided with your Basic, Standard and Advanced ArcGIS licenses.

- Geoprocessing tools—Perform remote sensing analysis and image processing using individual tools, and create and deploy them in processing models running locally. For those users who have ArcGIS Enterprise and ArcGIS Image Server, deploy your models in distributed processing and storage environments either on-premises or in the cloud. These geoprocessing tools augment the existing list of tools provided with your Basic, Standard and Advanced ArcGIS licenses.

Is Full Motion Video included on the Pro platform?

Yes. Image Analyst contains a suite of capabilities for Motion Imagery collected from manned and unmanned aircraft, including support for:

- Archived and live-stream MISB-compliant video imagery.
- DVR player and controls.
- Video archive search based on location or features.
- Bookmarking of specific locations and time stamps in the video stream.
- Bi-directional editing and display of GIS data in the video player and the map.
- Measure the length, area and height of objects in the video player window.
- Combine separate video and metadata files into one MISB-compliant video file.

Should I buy the Image Analyst or Spatial Analyst extension?

It depends on your application. Image Analyst is designed primarily for users who analyze and extract information from imagery - analysts who exploit multispectral, oblique and stereo characteristics of imagery. For example, Image Analyst enables you to analyze and compile features in a stereo image map view, interpret and make 3D measurements using oblique imagery in perspective map mode, perform advanced multispectral classification, or develop and implement custom remote sensing image processing algorithms for specific applications.

Spatial Analyst provides a suite of tools for processing and modeling raster data in general, including categorical data. For example, you can perform hydrologic modeling or proximity analysis on raster datasets.

How do I get the Image Analyst extension?

Order the Image Analyst extension via [MyEsri](#); since specific system, licensing and account is needed, this is usually handled by your system administrator. You may also request a free 21-day [ArcGIS Trial](#) license to include Image Analyst.

What are the requirements for the Image Analyst extension?

Image Analyst is an extension for ArcGIS Pro 2.1. It requires an ArcGIS Desktop Basic, Standard or Advanced license, which includes an ArcGIS Online organization subscription. ArcGIS Online organization subscription license manages ArcGIS Pro licenses as well as the Image Analyst extension. Thus, you need to have an ArcGIS Online account. The Pro license types include Named User, Single Use and Concurrent Use.

You do need to pair up your desired functionality with the capabilities contained in the foundational ArcGIS license. For example, if you want to work with the Stereo functionality, you can directly use satellite imagery with appropriate accurate RPCs. For collections of drone, aerial or satellite imagery you will need to create a mosaic dataset that includes accurate camera orientation. Creation of a mosaic dataset from existing aerial triangulation project files requires ArcGIS Standard. Currently the creation of the required stereo model table requires an ArcGIS Pro 2.1 Advanced license. For imagery without existing accurate orientation you need Ortho Mapping tools which are included with the ArcGIS Pro 2.1 Advanced license to perform the required triangulation and block adjustment. Once the suitable mosaic dataset has been created it can be directly used in ArcGIS Pro Basic, Standard or Advanced with the Image Analyst extension.

What are the requirements for working with stereo?

Licensing – You need ArcGIS Desktop Basic (use RPC), Standard (use RPC, build ortho mosaic) or Advanced (use RPC or build mosaic and stereo model), and the Image Analyst extension.

Eye Wear - You need stereo glasses, either red/cyan anaglyph glasses or active shutter eye wear.

Active shutter stereo eye wear requires:

- Your operating system must be Windows 8.1 or higher.
- Your monitor screen refresh rate should be at least 120 Hertz.
- Your NVIDIA graphic settings must have stereoscopic 3D capabilities enabled.

Preparation - For mosaic datasets, it is necessary to run the **Build Stereo Model** tool before accessing the stereo map viewer, which requires an ArcGIS Advanced license. If you are using a stereo pair with associated RPC files, no special preparation is necessary and ArcGIS Basic and/or Standard license is required.

Do I have all feature editing capabilities in Stereo?

Yes, the feature creation and editing experience is consistent across the ArcGIS platform. This means that feature creation and editing is performed in the stereo map view using the same tools, templates, versioning, and other capabilities that you are familiar with. The 3D cursor collects height location (i.e., Z) as well as X and Y location of features. These features are saved as shapefiles or in geodatabases exactly like other feature class data.

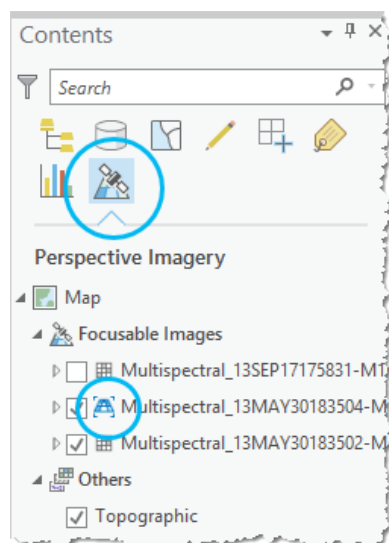
Do I need the Image Analyst extension for mensuration?

You need Image Analyst if you want to measure features in Image Space Analysis mode.

Image mensuration tools and capabilities are provided in ArcGIS Basic, Standard and Advanced, and work in the standard ArcGIS Pro map view. The mensuration tools also work in the Image Analyst perspective imagery map mode.

Can I work with multiple images in the Image Space Analysis viewer?

Yes, you can analyze multiple images in perspective mode. All the image layers eligible for viewing in **Perspective Imagery** mode are listed in the **Contents** pane under the heading “Perspective Imagery”.



You select one image as the “focusable image” to establish the image coordinate system in the map view, and all other images and layers are projected to the focusable image. You can have only one focusable image at a time in the map view. However, you can have multiple linked map views displaying imagery in perspective mode.

What are the requirements for an image to be used in Image space?

The imagery needs to be in its original geometric format. You do not get any advantage from Image Space Analysis if the image has been rectified or ortho-rectified. Additionally, the image must be a supported raster data type, and include either RPCs (Rational Polynomial Coefficients) or exterior orientation parameters. The exterior orientation parameters include X, Y, Z location and omega, phi, kappa of the sensor. This type of metadata is commonly provided with imagery from the satellite image providers. Alternatively, the exterior orientation parameters can be computed when performing an image orientation using the Ortho Mapping tools.