Introduction to the Image Analyst Extension

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What is the Image Analyst Extension?

- The Image Analyst Extension (IA) is an application extension which extends ArcGIS Pro with advanced imagery analysis tools, workflows, and user experiences.

- IA is for Image Analysts and Geospatial Analysts who focus on:
  - visual enhancement and exploitation of imagery
  - creation of derived products from imagery
  - taking of measurements from imagery
  - capturing of features from stereo imagery
  - advanced analysis and processing of imagery
  - exploitation and analysis of motion imagery
  - more…
Image Analyst Extension Product Specifics

- **Availability**
  - first release ArcGIS Pro 2.1
  - available for ArcGIS Pro Basic, Standard, or Advanced

- **Pricing**
  - the same as the Spatial Analyst Extension

- **Licensed**

- **Category B** (addition to Enterprise Agreements)
Image Analyst Capabilities
ArcGIS Pro 2.1, 2.2, and future
Image Analyst Extension Capabilities

• ArcGIS Pro 2.1
  - Stereo Display and Capture
  - Image Space Display, Capture, and Mensuration
  - Advanced Image Analysis

• ArcGIS Pro 2.2
  - Full Motion Video (FMV)

• ArcGIS Pro 2.3 (subject to change)
  - Deep Learning
  - Multipatch Editing in Stereo

• ArcGIS Pro TBD (subject to change)
  - Pixel Editor
Stereo Display and Capture

- **ArcGIS can already prepare imagery for stereo capture**
  - ArcGIS Pro Ortho Mapping, Drone2Map
- **ArcGIS can already manage stereo collections of imagery**
  - Mosaic Dataset / Image Services
- **ArcGIS Pro 2.1 + Image Analyst adds stereo display and capture**
Stereo Display and Capture

- **stereo imagery**
  - satellites, digital aerial, or drones

- **stereo display**
  - new “Stereo Map” view in ArcGIS Pro
  - contextual “Stereo Map” tab on the Pro ribbon
  - easy navigation of stereo pairs & model selector
  - anaglyph, shutter glasses, passive

- **stereo capture**
  - 3D cursor
    - multiple cursor shapes
    - roaming or fixed cursor modes
  - capture points, lines, polygons, (multipatches 2.3)
  - Pro editing tools are “stereo aware”

- **stereo measurements**
  - Pro measurement tools are “stereo aware”
Image Space Display, Capture, and Mensuration

- work with oblique imagery without orthorectifying it to a map’s spatial reference system
- geographic features are transformed to image space
- edit in image space
- take measurements in image space
- run analytics in image space
- toggle between image space and map space
### Advanced Image Analysis

#### ArcGIS Pro

**~50 Raster Functions**

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#### Image Analyst

**~60 Raster Functions**

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#### Spatial Analyst

**~13 Raster Functions**

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<th>Analysis: Hydrology</th>
<th>Analysis: Overlay</th>
<th>Surface Generation &amp; Analysis</th>
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<td>Watershed</td>
<td>Stream Link</td>
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#### Statistics

ArgStatistics

#### Visualization & Appearance

Contrast and Brightness
Convolution
Pansharpening
Resample
Statistics and Histogram
Stretch

#### Correction

Apparent Reflectance
Geometry Correction
Speckle Filtering (Lee,Frost,Kuan)
Thermal noise
Radiometric Calibration

#### Interpolation

Interpolate Irregular Data
- Nearest Neighbor
- IDW
- EBK
Swath

#### Data Management & Conversion

Raster to Vector
Vector to Raster
Colormap
Colormap To RGB
Complex
Grayscale
Remap / Reclass
Spectral Conversion
Unit Conversion
Vector Field
LAS to Raster
LAS Dataset to Raster
Clip
Composite
Extract Bands
Mask
Mosaic Rasters
Rasterize Features
Reproject

#### Surface Generation & Analysis

Aspect
Curvature
Elevation Void Fill
Hillshade
Shaded Relief
Slope
Contour

#### Python

Custom Algorithms

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### Analysis: Overlay

Weighted Sum

### Statistics:

Zonal Statistics

Cell Statistics
Full Motion Video (FMV)

- work with multiple archived & live stream videos
- intuitive "standard DVR" user experience
- video player and map synchronization
- spatial + temporal bookmarking
- capture features in video player
- export video clips
- pause and export current frame to georeferenced image
- MISB metadata viewer
- video multiplexer geoprocessing tool
  - transforms non-MISB sources to MISB source for use in ArcGIS Pro
Demos

Vinay Viswambharan
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