**Image Processing Software**

**Erdas Imagine 8.4**
Erdas Imagine 8.4 is a powerful image mapping and visualisation tool that allows different types of geographic data to be combined with satellite data. This version of Imagine includes features such as Virtual GIS, ability to create and edit ESRI shapefiles, faster and easier map production capabilities. The IMAGINE Expert Classifier™ is an integral part of the IMAGINE allowing users to graphically build expert systems for image classification, post-classification refinement and advanced spatial modelling. The graphical model maker in IMAGINE provides an intuitive ‘flow charting’ tool to interconnect hundreds of different processing steps and commands together into one executable model. It provides proven, easy to use functions for spatial, radiometric and spectral enhancement, topographic and GIS analysis tools and provides access to over 90 different raster and vector formats. The precise geo- and orthocorrection tools as well as comprehensive mosaicking tools prove to be a very handy tool. Apart from this, IMAGINE Professional™ includes many methods of classification and provides unique, advance tools for evaluating the quality of both input training data and resulting thematic maps which are essential for assessing classification accuracy. www.erdas.com

**EarthView**
Atlantis Science Inc. brings an image processing software, EarthView, containing a range of advanced and traditional functions to its full flexible utility. The software provides facility to display any number of images simultaneously, each in its own viewer, providing separate colour palettes, grid and vector overlays, real-scale coordinates, windowing, zooming, near real-time panning and 14 different contrast scaling methods. It also provides a wide selection of pre-programmed filters which can be used for such effects as sharpening, smoothing, noise removal, texture extraction and particle detection and also uses several filters of varying complexity specifically designed for removing speckle noise. It gives the choice of working with several classification algorithms which can be used on single or multi-spectral images. It can be used to mark rough control point pairs (points of common location) on the images and automatically refine them to a sub-pixel level, producing exceptional accuracy. EarthView supports all of the most widely used map projections and offers an easy-to-use macro programming language which allows to write own functions. [www.atlsci.com/products\_services.html](https://www.atlsci.com/products_services.html)

**ER Mapper 6.1**
Earth Resource Mapping has been providing stand-alone and optimum performance capabilities for image processing. The powerful ER Mapper wizards, easily integrates all of the imagery data into a single seamless mosaic. ER Mapper smart data algorithms can be created to enhance imagery and real-time processing can be experienced without the need for temporary disk files. The Compression Wizard compress images by 25:1, making images manageable. Real-time ER Mapper roaming and zooming facility allows users to get involved with their data. It also allows direct reading of common image formats. Powerful presentations can be created by combining imagery, vectors, GIS and tabular information into one unified view of your project area. The easy to operate Orthophoto Wizard, the Image Display and Mosaic Wizard, Airphoto Balancing Wizard and Compression Wizard work together to provide a completely integrated solution. www.ermapper.com/product/index.html

**ENVI**
Research Systems has released ENVI™, an image processing package, written entirely in IDL and running similarly on Windows, UNIX and Macintosh systems. IDL allows users to expand ENVI’s features or create own routines. ENVI’s intuitive graphical user interface allows users to access scores of built-in features directly from the GUIs through many drop-down and pop-up menus. GIS information can be integrated with image data by georeferencing images. “Heads up” vector digitizing can be performed with ENVI’s vector tools. Vectors can be overlayed on image data. ENVI’s orthorectification features allow users to correct for aircraft or satellite position, topography and other camera effects. SAR data can also be explored and new features pin pointed using ENVI’s complete, integrated radar toolset. [www.rsinc.com/envi/index.cfm](https://www.rsinc.com/envi/index.cfm)

**SPOT Image’s Image Processing Software**
Nigel Press Associates Ltd, Great Britain in collaboration with SPOT Image, has came out with an image processing software called SPOT – DIView . DIView is a MS/DOS software and runs fine in an MS/DOS, Window under 9x or NT, but is currently untested under Windows 2000. It was written in the early 1990s as a tool to translate satellite image data from a variety of sources and data formats into some simple and standard format for import into standard software such as Word or Powerpoint. DiView has some simple contrast enhancement capabilities and can pan and zoom around the image direct from the original data. Spot Image licensed a version dealing with only Spot satellite formats which they gave away free. It can be downloaded for free from www.npagroup.com/gisandit/downloads.htm. www.spot.com/home/proser/listeduc/soft/soft.htm

**Image Analyst**
Image Analyst, Z/I Imaging’s complete solution for desktop image processing and analysis provides the user a full set of image display, enhancement, and manipulation tools which are fully integrated with Intergraph MGE and MicroStation mapping and GIS products. Image Analyst features a set of image warping and radiometric correction tools, geared to handle any type of satellite imagery or aerial photography. A full complement of contrast enhancement tools coupled with user-definable arithmetic and spatial processing operators, make enhancing, displaying and manipulating image data easy. Image Analyst also supports a user-friendly interface for image extraction, collaging, splicing, histogram matching, and mosaicking with interactive seam definition and feathering. Image Analyst includes a set of basic and advanced functions for gray scale image processing, including convolution filtering, edge detection, Fourier transformation and filtering; and complex arithmetic and logical operators. [www.ziimaging.com/Products/Software/GISImaging/ImageAnalyst.htm](https://www.ziimaging.com/Products/Software/GISImaging/ImageAnalyst.htm) **IDRISI**
Idrisi was developed by the Clark Labs within the Graduate School of Geography at Clark University in 1987, as a raster-based microcomputer GIS and image processing system. The latest version Idrisi32 was released recently in 1999. Some of the image processing capabilities include Fourier Transform which is most commonly used in image processing to remove noise and to enhance images through filtering. The new Idrisi32 modules DRAWFILT, FILTERFQ and FREQDIST provide facilities for frequency domain filtering. While the modules SIGCOMP and SCATTER provide for visual assessment of signatures, the new Idrisi32 module SEPSIG provides quantified measures of the “separability” of pairs of signatures. Idrisi32 extends the utility of the image group file by adding the ability to interactively window into all open group file images by using the window tool in one image. This is extremely useful in exploring multiple bands and resulting classifications of digital imagery. [www.clarklabs.org/03prod/32frame.htm](https://www.clarklabs.org/03prod/32frame.htm)

**ILWIS**
A commonly used software for many remote sensing operations, it also provides image processing facilities. With the help of this software geometric corrections i.e. affine, second or third order polynomial transformation, projective transformation, etc. can be easily performed. Autocorrelation and semivariance of raster maps, spatial correlation and pattern analysis of point maps, multi-band statistics, directional histogram, neighbouring polygons, least squares fit and aggregation functions are also possible. Stretching, histogram equalisation, filtering, etc are added features in the software. The user can perform principal components and factor analysis.Interactive sampling with full statistical information and feature spaces, multispectral classification box classification, minimum distance, maximum likelihood are some of the classifications that are performable with Ilwis. www.itc.nl/personal/ilwisdev/index.html

**TNTmips**
TNTmips is MicroImages’ flagship product for geospatial analysis. It is an advanced image processing software combined with geographical information analysis, CAD, desktop cartography and other spatial database management applications. TNTmips supports every standard map projection and allows defining of custom projections to match those used anywhere in the world. Rectilinear map properties can be established for project materials that have distorted geometry. Map control points can be entered manually, by visually identifying features, or using georeferenced overlay object and establishing the spatial relationships with tie points. Automatic and interactive processes allows merger of raster, vector, TIN, and CAD objects containing such adjacent sections. TNTmips can use the spatial information contained in pairs of stereo images to derive an approximate surface of the overlap area. [www.microimages.com/products/tntmips.htm](https://www.microimages.com/products/tntmips.htm)

**ArcView Image Analysis**
Image Analysis was developed as a collaborative effort between ESRI and ERDAS. ArcView Image Analysis allows quick display and manipulation of image data, georeferencing imagery to shapefiles, coverages, global positioning system points, or reference images, perform image enhancement, automatically map feature boundaries, perform change detections for continuous and thematic imagery, perform multispectral categorisations for land cover mapping and data extraction and mosaic imagery from different sources and different resolutions. ArcView Image Analysis can supplement GIS analysis in many application areas. The software can be used by any ArcView GIS user as ArcView Image Analysis is intuitive and completely integrated with ArcView GIS. The results of an ArcView Image Analysis project can be used as input to applications that require ArcView Spatial Analyst or ArcView 3D Analyst software. ArcView. www.esri.com/software/arcview/extension/imageext.html

**GEOIMAGE**
An Image processing suite designed specifically for high-productivity mapping.The software contains modular workshpos providing tools for production of three main types of geographic information i.e GEOtopo for DEM production, GEOspatio for image map and line map production and GEOclass for photointerpretation and thematic applications. GeoImage provides an advanced Graphic User Interface (GUI) with online help. It is available for both Unix and Windows NT platforms. GEOclass is the first of a new generation of thematic mapping packages combining multicriterion classification and interactive computer-aided photointerpretation (CAPI). GEOclass enables you to perform supervised and unsupervised classifications and interactive CAPI functions at will. GEOcapi expands the capabilities of GEOclass. It offers computer-aided photointerpretation functions for the extraction of spatial data (e.g. land use / land cover) using both spectral and geographic criteria while simultaneously exploiting several image sources. [www.geoimage.fr](https://www.geoimage.fr/)

**PCI Geomatics**

**EASI/PACE**
PCI Geomatics’ Image Processing software “EASI/PACE” is an image processing package as well as a software package. It provides fundamental image processing capabilities, such as image arithmetic, several types of filtering, radiometric correction and enhancement, and intensity-hue-saturation and reverse transforms. Mean, median, mode, edge detection, Gaussian, and weighted average filters are supported. Image compression techniques are included in this Package. Images can be mosaicked and blended along arbitrary cut-lines, and histogram matched. The Atmospheric Correction (AC) facility radiometrically corrects LANDSAT TM, MSS, and SPOT imagery for atmospheric effects. Image Mapping Kit (IMK) creates high quality image, vector, and theme maps. Interactive placement and sizing of map components such as legends, tick marks, grids, scale bars and labels is supported. The Multispectral Analysis Kit extends the user capabilities by using multi-band imagery to help identify earth features. It aslo contains extensive capabilities for performing supervised and unsupervised classification using maximum likelihood, K-nearest neighbour and other classifiers. www.pcigeomatics.com/product\_ind/easipace.html

**OrthoEngine**
OrthoEngine, another geoprocessing product from PCIGeomatics, is also used extensively. Its main module OrthoEngine CoreKit includes several geoprocessing components. It offers tools for handling large production workloads, multiple file imports and support for Oracle 8i GeoImage databases. It includes an automatic mosaicking and colour balancing module, a versatile GeoGateway® to export OrthoEngine information products to GIS, CAD and mapping environments like ARC/INFO, ARCView etc. It has flexible tools for importing, merging and interpolating DEMs frpom any GeoGateway supported raster or vector format. Elevation data required for orthorectification may be produced through the DEM extraction, interpolation techniques or imported in a variety of different formats. [www.orthoengine.com](https://www.orthoengine.com/)

**Geomatica**
Geomatica, one of the latest products from PCI Geomatics, is a blend of EASI/PACE, SPANS, PAMAP, ACE, and OrthoEngine. It has been produced to develop a completely new functionality framework for producing a single, tightly integrated product i.e. Geomatica. In this the development of custom applications is facilitated through the PCI Visual Modeler™ graphical programming environment, PCI Author™ GUI builder, and a third party developer programme. It is highly customisable such that users will be able to select from various components that best fit their needs, create precise end-to-end process solutions using a wide range of tools. Through GeoGateway®, a translation component standard in all new PCI Geomatics products or available separately, users are provided with seamless and direct geospatial data transfer capabilities that permit read and write access to more than 80 data formats without the need for conversion. PCI Geomatics provides direct integration with Oracle GeoImage (for raster) and Oracle8i Spatial (for vector) data management capability, multi-channel 16 bit TIFF (tiled and hierarchical), and supports MrSID, LizardTech’s wavelet compression technology for significantly reducing the size of high resolution images while maintaining quality and integrity of the original. www.pcigeomatics.com/product\_ind/geomaticaindex.html .

**PCI Geomatics now also offers the ability to orthorectify IKONOS 1 and 4 metre data**
OrthoEngine Ikonos OrthoRectification Module is a powerful satellite orthorectification add-on module to the OrthoEngine Core package. It contains specialty sensor math models for generating precise orthoimages from Ikonos data, correcting for distortions caused by the satellite position, earth terrain, curvature, and the cartographic projection. It supports IKONOS Geo product in – UTM WGS84 GeoTiff Format.