Vision 7.1.1 Development Module

The Vision 7.1.1 Development Module is for engineers and scientists who are developing machine vision and scientific imaging applications. The development module includes NI Vision Assistant 7.1.1—an interactive environment for developers who need to quickly prototype vision applications without programming—and IMAQ Vision 7.1.1 for LabVIEW, LabWindows™/CVI™, and Microsoft Visual Basic—a library of powerful functions for image processing. In addition, the development module includes NI-IMAQ 3.1, the National Instruments driver software for controlling IMAQ hardware products.

This document outlines new functionality, system requirements, installation procedures, and descriptions of the documentation included with the Vision 7.1.1 Development Module. Refer to the readme.wri file, included with the software, for the most up-to-date information about the Vision 7.1.1 Development Module.

What's New in the Vision 7.1.1 Development Module

This section describes the new features available in all submodules of the Vision 7.1.1 Development Module.

- **Geometric Matching**—Functions for locating regions in a grayscale image that match a model, or template, of a reference pattern. Geometric matching is specialized to locate templates that are characterized by distinct geometric or shape information.

- **64-bit RGB**—Support for 64-bit RGB images.

- **2D Barcodes**—Functions for creating an application that reads Data Matrix and PDF417 2D barcodes.

- **Particle Classification**—An application for training and classifying samples in images, as well as functions for creating an application that trains and classifies samples based on their shape or a user-defined feature vector.

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- **Optical Character Recognition (OCR)**—An application for training and reading characters in images, as well as functions for creating an application that analyzes an image and trains and reads characters in images.

Note The Vision 7.1.1 Development Module supports interoperability between the Vision 7.1.1 ActiveX controls and Microsoft Visual Studio .NET 2003. Refer to the readme.wri file, included with the software, for more information.

This section describes the new features available in IMAQ Vision for LabVIEW, LabWindows/CVI, and Visual Basic.

- **Custom Data**—Support for reading, writing, and removing custom data from an image. Custom image data is accessible through the key with which the data is associated.
- **Load Image Dialog**—Support for displaying a dialog box with which you can preview image files and specify a path, or paths, to images. The dialog box displays selected image files to aid in selecting the correct file.

What's New in IMAQ Vision for LabWindows/CVI and Visual Basic

IMAQ Vision for LabWindows/CVI and IMAQ Vision for Visual Basic include the following additions:

- **Improved Particle Analysis**—The particle analysis interface is two to 10 times faster than the interface in previous versions of IMAQ Vision. The new interface now supports calibrated measurements, and is up to twice as fast when using uncalibrated measurements. Using the calibrated measurements feature of particle analysis yields results up to 10 times faster than the previous method.
- **AVI File Support**—Support for reading and writing multiple images to Audio Video Interleaved (AVI) movie files. IMAQ Vision 7.1.1 adds the ability to read AVI files, write compressed AVI files, and read and write additional data to AVI files.
- **Enhanced Circle and Ellipse Fitting**—New circle and ellipse fitting routines that ignore outliers, providing a more accurate circle and ellipse fit. You can configure the degree to which outliers are ignored.
- **Pattern Matching Enhancements**—Updated pattern matching interface that performs with improved accuracy. The new interface also provides low-level control of the pattern matching algorithm.
- **Overlay Enhancements**—Allows you to merge a non-destructive overlay into an image, making the overlay part of the image content. This feature allows you to view and print the image, with its overlay information, from any third-party imaging software.

What's New in Vision Assistant 7.1.1

Vision Assistant 7.1.1 includes the following additions:

- **Geometric Matching**—Functions for creating an application that searches for a pattern or template image with less concern about lighting variations, occlusion, or scale variation. The search relies on geometric features in the image for matching.

- **Japanese Language Support**—Vision Assistant software and documentation are now available in Japanese.

What's New in NI-IMAQ 3.1

This release of NI-IMAQ includes the following new features:

- Support for the IMAQ PCI-1410, IMAQ PCI-1426, and the NI 1429 devices.

- Support for routing external trigger lines to camera control lines on the IMAQ PCI-1426 and NI 1429 devices.

- Improved application programming interface for timing and triggering.

- Hardware stop trigger functionality on supported devices.

- Support for disabling serial commands through Measurement & Automation Explorer (MAX).

Minimum System Requirements

The development computer must meet the following minimum system requirements to run the Vision 7.1.1 Development Module:

- 233 MHz Pentium-class MMX processor

- Microsoft Windows 2000/NT 4.0/XP

- 1024×768 resolution (or higher) video adapter; 65,536 colors (16-bit) or higher

- Minimum of 128 MB RAM (256 MB recommended)

- Minimum of 300 MB of free hard disk space

Note If you want to take advantage of the LabVIEW Real-Time support, the remote system must meet additional system requirements. Refer to the *IMAQ Vision for LabVIEW User Manual* for information about remote system requirements.

Installing the Vision 7.1.1 Development Module

Complete the following steps to install the Vision 7.1.1 Development Module.

1. Insert the Vision 7.1.1 Development Module installation CD in the CD-ROM drive.

2. If you do not have autorun enabled, double-click `autorun.exe`. If you have autorun enabled, `autorun.exe` runs automatically.

3. Follow the onscreen instructions.

Licensing Your Vision Software

When you run the Vision 7.1.1 Development Module for the first time, it will prompt you to activate a license for the product. If you do not activate a valid license, the Vision 7.1.1 Development Module will run in Evaluation Mode and continue to prompt you to activate a license on each subsequent launch.

Complete the following steps to activate the IMAQ Vision 7.1.1 license through an Internet connection.

1. Run the product you want to license.

2. Click **Yes** when prompted to interactively activate your product.

3. Check that **Automatically activate through a secure Internet connection** is selected, and click **Next**.

4. Enter the serial number for the product, and click **Next**.

5. Enter your registration information, and click **Next**.

6. You can enter your email address to receive a copy of your activation code for your records.

After completion of these steps, the product(s) you installed are activated.

The following licensing options are available:

- IMAQ Vision 7.1.1 (777411-03)—Licenses IMAQ Vision only.

- Vision Assistant 7.1.1 (777784-03)—Licenses Vision Assistant only.

- Vision 7.1.1 Development Module (777859-03)—Licenses IMAQ Vision and Vision Assistant.

Related Documentation

In addition to these release notes, the Vision 7.1.1 Development Module documentation set consists of the following manuals and help files.

- The *IMAQ Vision Concepts Manual* contains vision conceptual information. Read this document if you are new to vision.

- The readme.wri file, located on the Vision 7.1.1 Development Module installation CD, contains last-minute information concerning this release of the Vision 7.1.1 Development Module.

- The *Vision Development Module Bookshelf*, available from **Start» Programs»National Instruments»Vision» Documentation» Search the Vision Bookshelf**, contains links to all Vision documentation. Use this PDF to access and search Vision Development Module documents installed on your computer.

The following sections describe the documents available for each application development environment.

IMAQ Vision for LabVIEW Documentation

- The *IMAQ Vision for LabVIEW User Manual* contains information about how to build vision applications using IMAQ Vision 7.1.1 with LabVIEW.

- The *IMAQ Vision for LabVIEW Help* (from inside the LabVIEW environment: **Help»IMAQ Vision for LabVIEW Help**) contains reference information about IMAQ Vision VIs and details about how to use IMAQ Vision 7.1.1 with LabVIEW.

- The *Search Vision Examples Help* contains links to all installed IMAQ Vision examples. In LabVIEW 6.1 and earlier, select **Help»Search Vision Examples** to access these example links. In LabVIEW 7.0 and later, select **Help»Find Examples** to browse or search installed IMAQ Vision example VIs.

IMAQ Vision for LabWindows/CVI Documentation

- The *IMAQ Vision for LabWindows/CVI User Manual* contains information about how to build vision applications using IMAQ Vision 7.1.1 with LabWindows/CVI.

- The *IMAQ Vision for LabWindows/CVI Function Reference Help*, available from **Start»Programs»National Instruments»Vision» Documentation»Search the Vision Bookshelf**, contains reference information and details about how to use Vision functions in LabWindows/CVI.

- Function panel help within LabWindows/CVI allows you to right-click within each Vision function to access help for that function, control, function class, and function library. Function panels are installed at `bin\NIVision.lfp` in your current LabWindows/CVI directory.

- Example programs for specific applications are installed at `<CVI>\Samples\Vision`.

IMAQ Vision for Visual Basic Documentation

- The *IMAQ Vision for Visual Basic User Manual* contains information about how to build vision applications using IMAQ Vision 7.1.1 with Visual Basic.

- The *IMAQ Vision for Visual Basic Reference Help*, available by pressing the <F1> button from within Microsoft Visual Basic or from **Start»Programs»National Instruments»Vision»Documentation» Search the Vision Bookshelf**, contains reference information and details about how to use Vision functions in Visual Basic.

- Example programs for specific applications are installed at `<Vision>\examples\MSVB`.

Vision Assistant Documentation

- The *NI Vision Assistant Tutorial* contains step-by-step instructions for prototyping a vision application with Vision Assistant.

- The *Vision Assistant Help* details each of the Vision Assistant functions and how to use them. To open the help in Vision Assistant, select **Help»Online Help**.

- The *NI Classification Training Interface Help* details each of the functions in the NI Classification Training Interface and how to use them. The *NI Classification Training Interface Help* also includes a tutorial, which guides you through an example of using the NI Classification Training interface.

NI-IMAQ Documentation

- The *IMAQ User Reference* describes the fundamental and advanced terminology for using an IMAQ device and provides reference material and tutorials for programming your IMAQ device with LabVIEW, LabWindows/CVI, Microsoft Visual C++, and Microsoft Visual Basic.

- The *NI-IMAQ User Manual* provides information about how to use NI-IMAQ and IMAQ devices to capture images for processing.

- The *NI-IMAQ VI Reference Help* contains reference information about NI-IMAQ VIs. To open the help in LabVIEW, select **Help» NI-IMAQ VIs**.

- The *Search NI-IMAQ Examples Help* contains links to all installed NI-IMAQ examples. In LabVIEW 6.1 and earlier, select **Help»Search NI-IMAQ Examples** to access these example links. In LabVIEW 7.0 and later, select **Help»Find Examples** to browse or search NI-IMAQ examples.