

LabVIEW™ Machine Vision Course Manual

SAMPLE

Course Software Version 2014
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Additional Information and Resources

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Student Guide

Thank you for purchasing the *LabVIEW Machine Vision* course kit. This kit contains the materials used in the three-day classroom, hands-on *LabVIEW Machine Vision* course.

You can apply the full purchase price of this course kit toward the corresponding course registration fee if you register within 90 days of purchasing the kit. Visit ni.com/training to register for a course and to access course schedules, syllabi, and training center location information.

A. Course Description

The LabVIEW Machine Vision course teaches you to understand the fundamentals of machine vision, use and select the hardware components of a machine vision system, and implement machine vision tasks and inspections using LabVIEW. This course assumes that you have taken the *LabVIEW Core 1* or have equivalent experience.

In the course manual, each lesson consists of the following:

- An introduction that describes the purpose of the lesson and what you will learn
- A discussion of the topics

In the exercise manual, each lesson consists of the following:

- A set of exercises to reinforce topics
- Some lessons include optional and challenge exercise sections or a set of additional exercises to complete if time permits.

B. What You Need to Get Started

Before you use this manual, make sure you have the following items:

- Computer running Windows 7
- LabVIEW Professional Development System 2014 or later
- NI Vision Development Module 2014 or later
- NI Vision Acquisition Software 2014 or later

- Vision Training Kit (available for purchase from Graftek Imaging)
- LabVIEW Machine Vision* course CD, from which you install the following directories:

| Directory | Description |
|-----------|--|
| Exercises | Contains all the VIs and support files needed to complete the exercises in this course |
| Solutions | Contains completed versions of the VIs you build in the exercises for this course |

C. Installing the Course Software

Complete the following steps to install the course software.

1. Insert the course CD in your computer. The **LabVIEW Machine Vision Course Material Setup** dialog box appears.
2. Click **Install the Course Material**.
3. Follow the onscreen instructions to complete installation and setup.

Exercise files are located in the <Exercises>\LabVIEW Machine Vision folder.



Tip Folder names in angle brackets, such as <Exercises>, refer to folders on the root directory of your computer.

Repairing or Removing Course Material

You can repair or remove the course material using the **Add or Remove Programs** feature on the Windows **Control Panel**. Repair the course material to overwrite existing course material with the original, unedited versions of the files. Remove the course material if you no longer need the files on your computer.

D. Course Goals

This course prepares you to do the following:

- Understand the fundamentals of selecting and setting up the appropriate machine vision hardware components
- Develop a machine vision application in LabVIEW
- Acquire and display images in LabVIEW using machine vision hardware
- Use several image processing functions to process, analyze, and inspect images

Introduction to Machine Vision and Image Acquisition

Topics

- A. Why Machine Vision?
- B. Components of a Machine Vision System
- C. What is a “Good” Machine Vision Image?

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Lesson 1 Introduction to Machine Vision and Image Acquisition

- A. Why Machine Vision?
- B. Components of a Machine Vision System
- C. What is a “Good” Machine Vision Image?

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