

# Pill Kit for Project Based Learning



### Basic Description:

FANUC Robotics Industry Certified Education Robot Training Program offers a Project Based Learning “Pill Sorting Package” designed to give students a practical application for learning machine vision concepts using FANUC *i*RVision Error Proofing (CERTVEP) and FANUC *i*RVision 2D Guidance (CERTV2D).

FANUC Robotics *i*RVision Error Proofing is used in industry as a powerful, easy-to-use, and efficient solution to help maximize quality and production uptime by reducing scrap, rework, repair, warranty and other production losses due to manufacturing inconsistencies. *i*RVision Error Proofing uses geometric pattern matching to identify product, inspect features, validate process, determine presence/absence and check product orientation. *i*RVision Error Proofing determines a PASS or FAIL based on various image criteria established by the programmer.

FANUC Robotics *i*RVision 2D Guidance builds upon vision concepts by teaching students how to use a taught image within a calibrated system to automatically adjust the programmed motion of the robot. *i*RVision 2D Guidance is used to locate the shift and rotation of the image in two dimensions. Once the location and rotation data is captured by *i*RVision, it is then used to modify the movement of the robot to accommodate for any changes.

### Course Objectives:

#### Basic *i*RVision with Error Proofing (CERTVEP)

- Understand *i*RVision Error Proofing and *i*RVision 2D Processes
- Hardware and Software Requirements
- Camera options and setup
- Establishing communications to the teaching PC
- Error Proofing setup, tools and functions
- Teach an Error Proofing vision process
- Vision commands and robot programming

#### Basic *i*RVision 2D (CERTV2D)

- Camera and Lighting Concepts
- Digital Camera Types
- Grayscale values, pixels, focal length, field of view and resolution
- Color Contrast
- Bright-Field Lighting and Dark-Field Lighting
- *i*RVision System Setup and Programming
- Frames
- Calibration
- Single view vision process setup
- Vision commands and robot programming

#### Includes:

- Pneumatic Dual Position Vacuum Gripper
- (2) Pill Bottles
- (10) Red Plastic Pills
- (10) White Plastic Pills
- Loading Tray / Sorting Surface
- (1) Textbook: Basic *i*RVision with Error Proofing (P/N: CERTVEP)
- (1) Textbook: Basic *i*RVision 2D (P/N: CERTV2D)
- Optional: Student Textbook Package

#### Requirements:

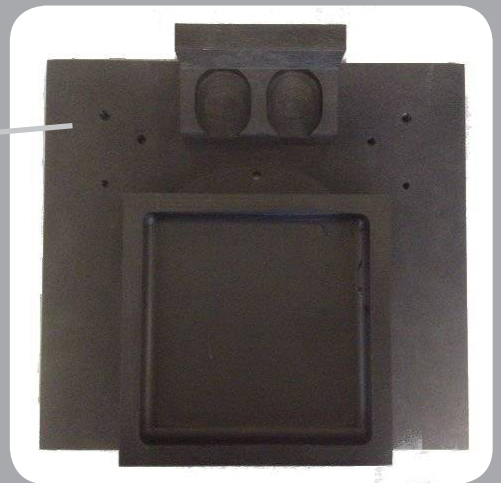
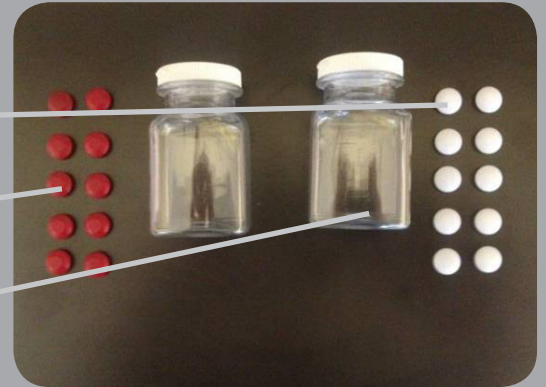
- *i*RVision 2D Guidance Hardware & Software
- *i*RVision CERT Program – Instructor Training
- *i*RVision Setup & Operations – 2D Web Course
- Attend *i*RVision Setup & Ops – 2D Course at FANUC America location

#### Prerequisites:

- Instructor:
  - Material Handling CERT Training (MH-CERT)
- Students:
  - Basic Robot Operations
  - Basic HandlingTool Operations and Programming

## Includes:

- **Pneumatic Dual Position Vacuum Gripper**
- **(10) White Plastic Pills**
- **(10) Red Plastic Pills**
- **(2) Pill Bottles**
- **Loading Tray / Sorting Surface**
- **(1) Textbook: Basic iRVision with Error Proofing**
- **(1) Textbook: Basic iRVision 2D**
- **Optional: Student Textbook Package**



# FANUC

FANUC AMERICA CORPORATION  
3900 WEST HAMLIN ROAD  
ROCHESTER HILLS MI 48309-3253

