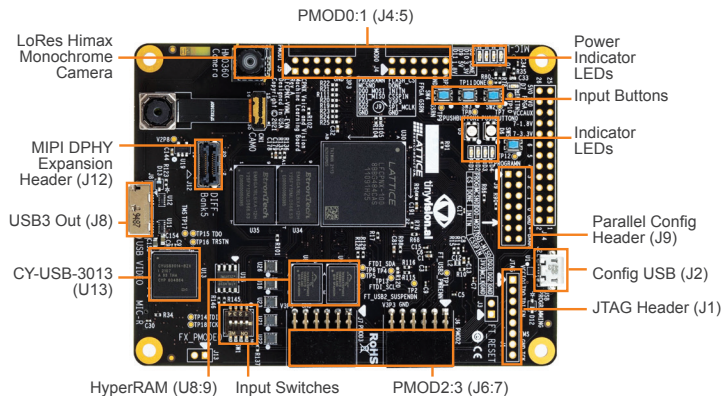


This document provides a brief introduction to the CertusPro-NX Voice and Vision Machine Learning Board. The board is pre-programmed to demonstrate the Object Detection Demo.



## 1

### Check Kit Contents

The CertusPro-NX Voice and Vision Machine Learning Board kit contains the following items:

- CertusPro-NX Voice and Vision Machine Learning Board
- Himax HM0360 camera sensor (U24)
- USB Cable for programming via PC (USB-A to USB 2 Micro-B)
- USB Cable for video output (USB 3 Micro-B to USB-A)
- Quick Start Guide

## 2

### Preparing the Hardware and Running the Demonstration

Follow the steps below to prepare the hardware and start the pre-programmed demonstration.

- Connect USB 3 Micro-B to USB-A cable from USB3 Video Out (J8) to PC
- No jumpers need to be placed on the board
- Ensure SWITCH0 of SW1 is ON to boot CYUSB3014 (U13) from I<sup>2</sup>C EEPROM
- Install python if not already installed
- Download the [CertusPro-NX MobileNet Object Classification on VVML Board Reference Design - Source Code](#)
- Run the Lattice\_Object\_Classifier.exe located in \ReferenceDesign\_Package\ Demo\_Package\Lattice\_Object\_Classification\_App\Win\_x64
- The app opens as shown on Fig. A

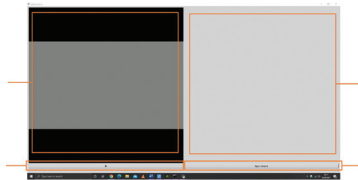
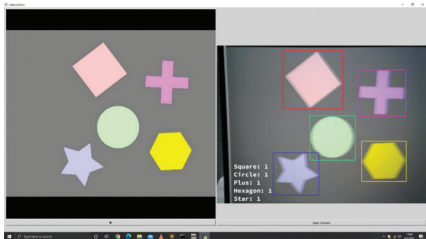


Fig. A

- 3**
- Press Play/Pause button to start the video playback. Press it again to pause the video playback. The video loops until the app is closed or Play/Pause button is pressed.
  - Press Open Camera button to get the feed from the board's camera to display in the app window. If the board is detected, video from the board will be displayed as shown below. If the board is not detected, it will show a message to check the connection of the board.
  - Hold the board in such a way that the camera is facing the video playing on the monitor.



**Fig. B**

- The demo output contains the bounding boxes for detected objects in each frame and it displays the cumulative count of objects detected on the display.

- 4 Done!**
- Congratulations! You have successfully demonstrated the Object Detection demo on the CertusPro-NX Voice and Vision Machine Learning Board. This demo is intended to show the basic functionality of the kit as shipped. This kit can be reprogrammed and/or connected to additional hardware to demonstrate a number of solutions. To learn more about these solutions and download full documentation for this kit, including schematics, visit the Lattice website at: <https://www.latticesemi.com/certuspro-nx-vvml-board>.

Development with the Lattice CertusPro-NX FPGA is supported by Lattice Radiant Software. You can learn more and download the latest version from the Lattice website at [www.latticesemi.com/radiant](http://www.latticesemi.com/radiant).

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