

Everest Tiny Yolo v2.0 Demo

Getting Started

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1. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

1.1 Revision 1.0

Revision 1.0 is the first publication of this document.

2. Getting Started

The Tiny Yolo v2.0 is a real-time object detection demo, which can detect 20 object classes like *person*, *dog*, *bottle*, *car* and so on. It uses one 1Gbit ethernet port of the Everest DEV Board, to get the video data from a computer with a camera and to send back the results of processing. For more information please refer to “LAB10 Tiny Yolo user guide.pdf”.

2.1 Prerequisites

For the Everest Tiny Yolo v2.0 Demo the following is needed:

Item	Quantity
Everest DEV Board	1
12 V / 5 A wall-mounted power adapter	1
USB 2.0 A male to mini-USB B cable for UART / Programming interface to PC	1
Flash Pro PolarFire v2.0 or later	1
computer running MS Windows™ with build in or external camera and ethernet port	1
RJ-45 ethernet cross-over cable	1

Note 1: The Everest DEV Board offers an on-board FlashPro5 programmer, which can be used to program and debug with Identify, SmartDebug and embedded application software using SoftConsole.

Note 2: In order to program the firmware image “LAB9 Everest UART to SPI-FLASH Demo” is needed.

2.2 Handling the Board

Pay attention to the following points while handling or operating the board:

Handle the board with electrostatic discharge (ESD) precautions to avoid damage.

For information about ESD precautions see

https://www.microsemi.com/documentportal/doc_view/126483-esd-appnote.

2.3 Board-Setup Revision PROTO

2.3.1 Toggle-Switch S1 – PCIe

Warning: S1-1 and S1-2 must not be at position on at the same time!

SWITCH ON	PCIe LANES
S1-1	x1
S1-2	x4

2.3.2 Toggle -Switch S5 – SC SPI-Flash enable

Warning: S5-1 and S5-2 must not be at position on at the same time!

SWITCH ON	SC SPI-FLASH
S5-1	ENABLE
S5-2	DISABLE

2.3.3 DIP-Switch S8 – FMC Voltage Selector

Warning: S8-1 to S8-4 must not be at position on at the same time!

SWITCH ON	FMC VOLTAGE
S8-1	3.3 V
S8-2	2.5 V
S8-3	1.8 V
S8-4	undefined (not connected)

2.3.4 Toggle -Switch S9 – VDDAUX2 & VDDAUX5 Voltage

Warning: S9-1 and S9-2 must not be at position on at the same time!

SWITCH ON	VDDAUX2 & VDDAUX5
S9-1	2.5 V
S9-2	FMC voltage

2.4 Board-Setup Revision A and B

2.4.1 Toggle-Switch S1 – PCIe

SWITCH	PCIe LANES
S1-1 (marking)	x4
S1-2	x1

2.4.2 Toggle -Switch S5 – SC SPI-Flash enable

SWITCH	SC SPI-FLASH
S5-1 (marking)	DISABLE
S5-2	ENABLE

2.4.3 DIP-Switch S8 – FMC Voltage Selector

SWITCH	FMC VOLTAGE
S8-1 off, S8-2 off	1.8 V
S8-1 on, S8-2 off	2.5 V
S8-1 off, S8-2 on	undefined (not recommended)
S8-1 on, S8-2 on	3.3 V

2.4.4 Toggle -Switch S9 – VDDAUX2 & VDDAUX5 Voltage

SWITCH	VDDAUX2 & VDDAUX5
S9-1 (marking)	2.5 V
S9-2	FMC voltage

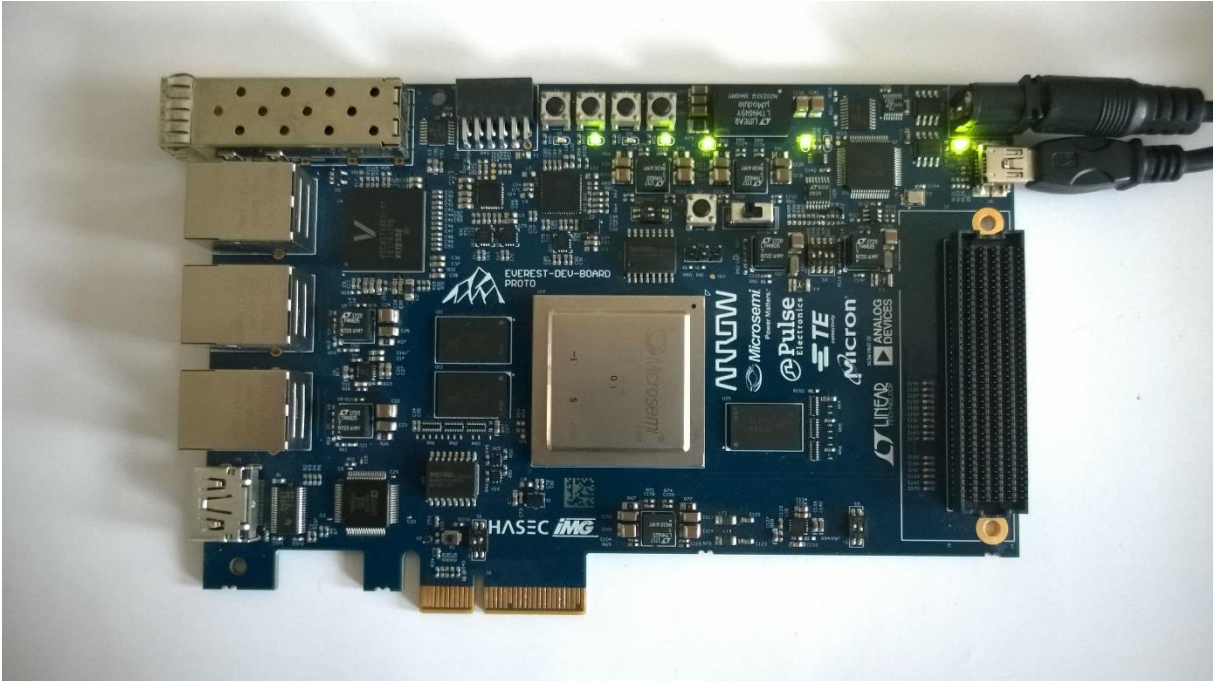


Figure 1: Everest Board

2.5 Powering up the Board

The Everest DEV Board is powered up using the 12 V DC jack. For programming connect it although with your computer using USB mini B connector J9. Connect the RJ-45 ethernet cross-over cable to J3 (the up most ethernet port).

3. Program

3.1 Loading the Firmware image into the SPI-Flash

In order to load the firmware binary into the SPI-flash an UART to SPI-Flash design has to be load onto the Everest DEV Board. Please refer to “LAB9 Everest UART to SPI-FLASH Demo”. Make sure, you select the appropriate binary for your Everest DEV Board (“*LAB10 Firmware_BIN.stp*” for Everest DEV Boards with preproduction or production PolarFire FPGAs and “*LAB10 Firmware_BIN_ES.stp*” for devices with engineering samples).

3.2 Programming the demo design

The demo design staple file will be programmed with the FlashPro tool, in the following four steps:

1. Open the FlashPro tool and create a new project in *Single Device mode*.
2. Ensure that the FlashPro5 programmer is enabled.
3. In the configuration tab, select the appropriate staple file (“*LAB10 Bitstream.stp*” for Everest DEV Boards with preproduction or preproduction PolarFire FPGAs and “*LAB10 Bitstream_ES.stp*” for devices with engineering samples)
4. Program the FPGA.

4. Running the Demo Design

Please refer to “LAB10 Tiny Yolo user guide.pdf”.