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Tara

Building SDK Solution – User Manual

Revision 1.1

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Contents

Tara SDK

1 Revision History

Rev No	Date	Major Changes	Author
1.1	09-Aug-2016	Initial Draft	Karthikeyan A

2 Introduction

Tara SDK package, built on OpenCV Image Processing Library(version 3.1.0) is bundled with Tara - Stereo Vision USB 3.0 Camera. Tara SDK includes the commonly used stereo camera functions such as disparity, depth measurement, etc.. and few real time applications implemented in OpenCV, comes with the source code.

3 Scope

The scope of this document is to help the user in building and installing the samples given in the Linux SDK package.

4 Building SDK Samples

By default, the release package comes with prebuilts that will work on 32 and 64 bit versions of Ubuntu-14.04. So Ubuntu-14.04 users can directly use our prebuilts whereas other version users need to build and install the SDK on their system.

4.1 Prerequisites

4GB Memory space in Hard Disk

Internet connectivity

4.2 Commands

i. Change the location to the Source folder in the extracted package.

$ cd <Extracted_Package_Location>/Tara_SDK_LINUX_REL_PACKAGE_xxxx/Source

ii. Run a mandatory script file (**configure.sh**) before running the Makefile. It will download the necessary dependencies, OpenCV library 3.1.0 and build the same so that these can be used and linked while building the SDK samples. Running this command, will do all the necessary things that are mentioned in section 4.2.1 and section 4.2.2.(No need to perform these sections separately)

$ ./configure.sh

iii. Now run the make command to build all the libraries, samples and applications provided in the SDK.

$ make

iv. Install the built libraries and binaries into a specific path('/usr/local/tara-sdk') and add that path to the required configuration files.

$ sudo make install

v. Reload the shell to use the modified environment variables by using the command.

$ source ~/.bashrc

After successful installation, try executing the installed samples.(Refer to section-8 in Tara_SDK_Linux_User_Manual.pdf in the Documents folder)

Note:

Based on the system configuration and internet connectivity speed, the process of building and installing SDK samples takes roughly 1-2 hours of time.

On an Intel-i7 system with 8GB RAM, it took nearly 1 hour to complete the process.

4.2.1 Dependencies to be Installed:

Install the following dependencies for using OpenCV and to use Point cloud Library.

1. Some general development libraries

   $ sudo apt-get install build-essential make cmake cmake-qt-gui g++

2. libav video input/output and glib development libraries

   $ sudo apt-get install libavformat-dev libavutil-dev libswscale-dev libglib2.0-dev

3. Video4Linux camera development libraries

   $ sudo apt-get install libv4l-dev

4. Eigen3 math development libraries

   $ sudo apt-get install libeigen3-dev

5. OpenGL development libraries (to allow creating graphical windows)

   $ sudo apt-get install libglew-dev

6. GTK development libraries (to allow creating graphical windows)

   $ sudo apt-get install libgtk2.0-dev

7. Udev development libraries (to allow access to device information)

   $ sudo apt-get install libudev-dev

8. Point Cloud Library

   $ sudo add-apt-repository ppa:v-launchpad-jochen-sprickerhof-de/pcl

```
$ sudo apt-get update
$ sudo apt-get install libpcl-all
```

4.2.2 Developing applications with Tara using OpenCV:

The OpenCV 3.1.0 version has to built with added custom format support(Y16) in order to stream our Tara camera. The steps done inside the configure shell script to install OpenCV are,

i. Downloaded the latest version of opencv (Version 3.1.0) for Linux with the following link. (http://opencv.org/downloads.html)

ii. Downloaded the contrib modules additionally from the github repository. (https://github.com/opencv/opencv_contrib/tree/3.1.0)

iii. In order to add Y16 format support, Replaced the existing cap_v4l.cpp in the folder path: *opencv-3.1.0/modules/videoio/src/* with **e-con's patch file** in the SDK folder path : *Source/opencv-patch/*

iv. Built the OpenCV library with contrib modules, without LIBV4L, with TBB support, and installed the package in a specific path('/usr/local/tara-opencv') in order to use them for linking.

v. Added the installed library path to a configuration file(/etc/ld.so.conf.d/01-tara-opencv.conf), in order to search for the libraries automatically when it is needed.

Note:

We have tested the Tara SDK in *Ubuntu 12.04* and *Ubuntu 14.04* platforms.

The Point Cloud Library has not officially launched the PPA's for versions higher than *Ubuntu 14.10.* So higher version users cannot be able to install the Tara SDK, please use our Makefiles as reference in building the samples.

5 Conclusion

This document provides the detailed explanation of building the sample codes given along with the Tara SDK.